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William T. Tamm

Viri-culdy

No 63

16 April 1877. —

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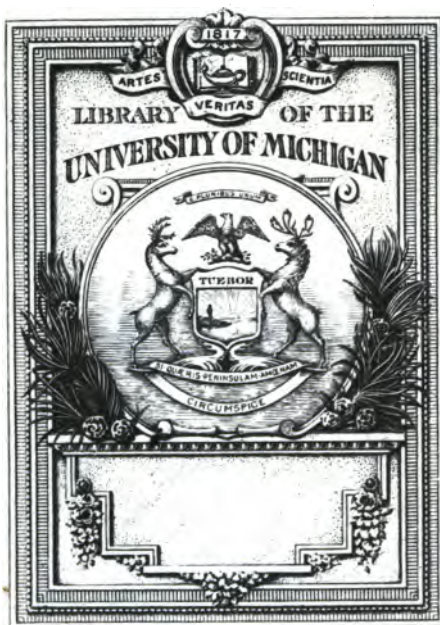
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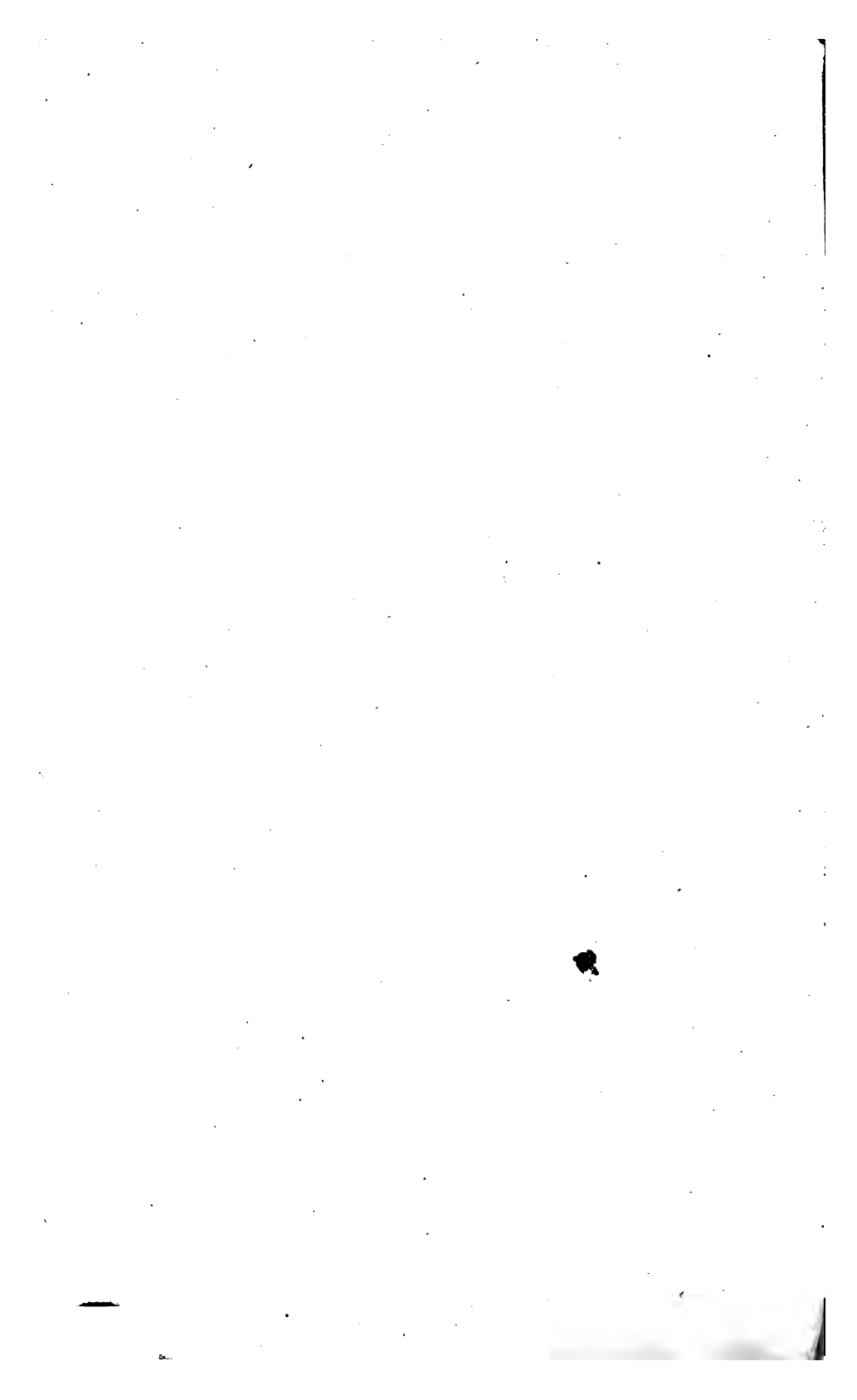
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A
COLLECTION

OF

MATHEMATICAL

TABLES.



A
COLLECTION
OF
MATHEMATICAL TABLES,

FOR
THE USE OF STUDENTS

IN
UNIVERSITIES AND ACADEMIES,

FOR THE PRACTICAL
NAVIGATOR, GEOGRAPHER, AND SURVEYOR,

FOR
MEN OF BUSINESS,

&c.

BY
ANDREW MACKAY,

LL.D. F.R.S. EDINB. &c.

London:

PRINTED FOR LONGMAN, HURST, REES AND ORME, PATERNOSTER-ROW;
W. J. AND J. RICHARDSON, ROYAL EXCHANGE; BLACKS AND
PARRY, LEADENHALL-STREET;
AND A. CONSTABLE AND CO. EDINBURGH.

1804.

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THIS
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IS,

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P R E F A C E.

THE great use of Tables, for the purpose of facilitating calculations in all the various branches of Mathematics, is so apparently obvious, as to require no comment. There has not, however, been any extensive collection of tables hitherto published; and those in common use being scattered through various works, much time is lost, and a considerable portion of unnecessary expence incurred. In order, therefore, to remove these difficulties, the following Collection has been made; which, it is hoped, will be found useful to students in Universities and Academies; to the practical Navigator, Geographer and Surveyor, and to many others in different departments in life.

Very great attention has been paid to the correction of the press, so that it is presumed few errors have escaped notice; and, as an Explanation of the Tables is prefixed, it is, therefore, hoped, that no difficulty will occur in the manner of using them.

It

It was the intention of the Author to have added several more scarce and valuable tables, but, by so doing, the work would have been swelled far beyond its intended limits ; these additional tables, however, may, probably, appear in a distinct volume, to which this is to be considered as the first.

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ERRATA.

Page 1. Aisla, for Lat. $55^{\circ} 15'$, and Long. $5^{\circ} 5'$,
read 55 56. 6 9.

Page 11. Rothesay, for time of high water 11 hours, read 12 hours.

The Binder will observe, that Sig. [D] of the Tables has been omitted—Sig. [E] must therefore immediately follow Sig. [C], being a continuation of Table VIII.

EXPLANATION

EXPLANATION OF THE TABLES.

TABLE I.

The Latitudes and Longitudes of Places.

THIS table is divided into seven columns; the first column contains the names of the places, ranged in alphabetical order; the second, the continent in which the place is situated, or to which it belongs; the third, the country, province, or island; the fourth, the sea or coast; the fifth and sixth columns contain the latitude and longitude respectively, expressed in degrees and minutes, (the longitude being reckoned from the meridian of Greenwich); and the seventh column contains the time of high water at new and full moon, at those places where there are tides, and where the time is known.

This table is compiled from the requisite Tables, the Philosophical Transactions, the *Connaissance des Temps*, *Exposition du Calcul*, and other treatises which, it was presumed, could be depended on. A few of the places also are from the communications of correspondents,* and from the observations of the author. And he has been careful neither to insert any of those places, whose positions, to him, seemed doubtful; nor places within land, as being unnecessary to the practical seaman, and serving only to increase the bulk of the table, without being of any real utility. Hence, although this table is not so extensive as some others, yet he flatters himself it is as correct as any of the same kind hitherto published, having bestowed great pains for this purpose.

TABLE II.

To find the Moon's Age.

By this table, the moon's age is found by inspection only, from the year 1800 until 1894, inclusive; and the method of extending it a few years before or after the limits of the table is obvious.

This table is divided into two parts; the first of which contains the months and days, and the other the years, with the moon's age. In this last part, N stands for new moon, and F for full moon. In order, therefore, to find the moon's age on any given day of any given year, within the limits of the table, find the pro-

* The positions of many of those places on the west coast of Scotland, were communicated by Mr. Lamont, of Greenock.

posed day under the given month, then, on the same horizontal line, and under the given year, is the moon's age required. Thus, upon the 17th of October 1880, the moon's age is thirteen days. March 12th, 1869, it is new moon, and on the 18th of the same month, in the year 1878, it is full moon.

The epact for any given year within the limits of the table, is found at the bottom of the column immediately under the given year. Thus; the epact for the year 1850 is 17.

TABLES III. AND IV.

Epacts of Years and Months.

By these tables, the mean age of the moon, at any given time, may be found to the nearest minute, by adding the epacts of the given year and month, and the proposed time reduced to the meridian of Greenwich. If this sum exceeds a mean lunation, or 29 d. 12 h. 44', deduct it therefrom. The mean time of new moon is found by subtracting the sum of the epacts of the given year and month, from 29 d. 12 h. 44'; but if greater than that quantity, subtract it from 59 d. 1 h. 29', to which add the longitude, in time, if east, but subtract it if west. The mean time of the preceding, or following full moon, is found by subtracting, or adding 14 d. 18 h. 22'; and the quarters, by applying 7 d. 9 h. 11'.

TABLE V.

Correction to be added to the Time of High Water at any given Place at New and Full Moon, to find the Time of High Water on any other Day of the Moon.

Column 1 of this table contains the moon's age to every six hours; and the second column contains the corresponding time, to be added to that of high water at full and change, to find the time of high water on the proposed day.

TABLE VI.

Equation of the Time of High Water, depending on the angular Distance between the Sun and Moon, and on the Distance of the Moon from the Earth.

In order to ascertain the time of high water at a given place, with any tolerable degree of accuracy, corrections, depending on the angular distance between the sun and moon, and on the distance of the moon from the earth, must be used. The distance, also, of the sun from the earth ought to be taken into account; but this last being much less than either of the former is here neglected. In this table, therefore, the combined correction arising from the position of the moon, with respect to the sun in right ascension, and to the earth, is contained. The angular distance in

right ascension, in time, is expressed by the moon's transit; and the distance of the moon from the earth is in the inverse ratio of its horizontal parallax, and both these being readily found by the Nautical Almanac, they are, therefore, adopted as the arguments of the table.

The time of high water at any proposed place, is found by applying the equation from the table answering to the time of transit and horizontal parallax, reduced to the meridian of the given place, according to its title, to the sum of the time of high water at full and change, and the time of transit reduced to the meridian of the given place by Table XXX. This will be the approximate time of high water; and if greater accuracy be required, the time of transit and horizontal parallax are to be again reduced to this time; and the equation answering to these, is to be taken from the table, and applied as before.

TABLE VII.

The Miles and Parts of a Mile contained in a Degree of Longitude, at each Degree of Latitude.

The first column of this table contains degrees of latitude, and the second column contains the miles and hundredth parts of a mile in a degree of longitude, corresponding thereto: the other columns are a continuation of the first and second. If the given latitude consists of degrees and minutes, a proportional part of the difference between the miles and parts of a mile, answering to the given and following degrees of latitude, is to be found, and subtracted from the miles, &c. answering to the given degree of latitude.

EXAMPLE.

Required the number of miles contained in a degree of longitude, in latitude $48^{\circ} 50'$?

Miles in a degree of longitude,	in latitude	48°	=	40.15
	in latitude	49°	=	39.36
Difference	-	-	-	.79

Then, As $60' : 50' :: .79 : .66$ nearly; which, subtracted from 40.15, gives 39.49, the measure of a degree of longitude, in latitude $48^{\circ} 50'$.

The proportional part may be very readily found by the traverse table, as follows. Find that page in the table, in which the given minutes of excess above the next less degree of latitude, in a latitude column, answers to 60 in a distance column; then, opposite to the difference of the numbers in a distance column, is the proportional part in a latitude column. Thus, in the preceding example, $50'$ in a latitude column, will correspond with $60'$ in a distance column nearly, under 33° ; then, opposite to 79 in a distance column is 66 in a latitude column, the proportional part as before.

This table may be applied to calculations in Parallel and Middle Latitude Sailing. It is a table of natural co-sines, adapted to a radius of 60.

TABLE VIII.

The Logarithms of Numbers.

Logarithms are a set of quantities expressing the measures of the ratios of the terms of another set of quantities or numbers. Or, Logarithms are the indices or exponents of a series of numbers in geometrical progression.*

Let the following be a series of numbers in geometrical progression, namely, $1, r, r^d, r^{2d}, r^{3d}, r^{4d}, r^{5d}, r^{6d}, \&c.$ And the indices, or $0, d, 2d, 3d, 4d, 5d, 6d, \&c.$ will be the logarithms of the corresponding terms, each of each.

By a comparison of the several terms of these serieses, it is evident that $2d + 4d$, or $6d$, answers to, or is the logarithm of $r^{2d} \times r^{4d}$, or r^{6d} . And $6d - 2d$, or $4d$ answers to $\frac{r^{6d}}{r^{2d}}$, or r^{4d} .

Also, $\frac{2d + 4d}{2}$, or $3d$, answers to $\sqrt{r^{2d} \times r^{4d}} = \sqrt{r^{6d}} = r^{3d}$, &c.

And hence, all the various rules for performing Multiplication, Division, Proportion, Involution, Evolution, &c. by logarithms, are obvious.

Since r and d may be expounded by any numbers whatever, it is, hence, evident, there may be an infinite variety of different kinds of logarithms. Let 10 be substituted for r , and 1 for d , and the serieses become

$$\begin{array}{cccccccc} 1 & . & 10 & . & 100 & . & 1000 & . & 10000 & . & 100000 & . & 1000000 & \} & \&c. \\ 0 & . & 1 & . & 2 & . & 3 & . & 4 & . & 5 & . & 6 & \end{array}$$

These are the logarithms in common use, and are called *common logarithms*, in order to distinguish them from other kinds of logarithms.

Hence, in this form of logarithms, the logarithm of 1 is 0, the log. of 10 is 1, the log. of 100 is 2, the log. of 1000 is 3, &c. Whence, the logarithm of any term between 1 and 10, being greater than 0, but less than 1, is a proper fraction, and is expressed decimally. The logarithm of each term between 10 and 100 is 1, with a decimal fraction annexed; the logarithm of each term between 100 and 1000 is 2, with a decimal fraction annexed, and so on. The integral part of the logarithm is called the *Index*, or *characteristic*, and the other the *decimal* part. The index is, evidently, always one less than the number of figures in the natural number, exclusive of fractions, if there are any in that number.

* Or, Logarithms are a series of numbers so contrived, that the sum of the logarithms of any two numbers, is the logarithm of the product of these numbers. Hence it is inferred that, if a rank, or series of numbers in arithmetical progression, be adapted to a series of numbers in geometrical progression, any term in the arithmetical progression, will be the logarithm of the corresponding term in the geometrical progression.

The index of the logarithm of a number, consisting in whole, or in part of integers, is affirmative; but if the number be a proper fraction, the index is negative, and is usually marked by the sign (—) placed either before or above the index. If the first effective figure of the decimal fraction be adjacent to the decimal point, the index is — 1, or $\bar{1}$: if there is one cypher between them, the index is — 2, or $\bar{2}$: if two cyphers, the index is — 3, or $\bar{3}$. Instead of negative indices, their arithmetical complements are used by many; as by this means the computations are rendered easier, especially to those unacquainted with the first principles of Algebra.

The decimal parts of the logarithms of numbers, consisting of the same figures, are the same, whether the number be integral, fractional, or mixed. This is illustrated as follows:—

Number	189600	Logarithm	-	-	5.27784
	18960	-	-	-	4.27784
	1896	-	-	-	3.27784
	189.6	-	-	-	2.27784
	18.96	-	-	-	1.27784
	1.896	-	-	-	0.27784
	.1896	-	-	-	— 1.27784 or 9.27784
	.01896	-	-	-	— 2.27784 - 8.27784
	.001896	-	-	-	— 3.27784 - 7.27784
	.0001896	-	-	-	— 4.27784 - 6.27784
	.00001896	-	-	-	— 5.27784 - 5.27784

Table VIII. contains the logarithms of all numbers under 10000, extended to five decimal places, which is sufficiently accurate, in most cases, in navigation or practical mathematics. As the index is not prefixed, it must therefore be supplied, which is easily done, being always one less than the number of figures in the natural number.

PROBLEM I.

To find the logarithm of any given number.

RULE.

If the number is under 100, its logarithm is found in the first page of the table, immediately opposite thereto.

If the number consists of three figures, find it in the first column of the following part of the table, opposite to which, and under 0, is its logarithm.

If the given number contains four figures, the three first are to be found, as before, in the side column, and under the fourth at the top of the table is the logarithm required; to which, the index 3 is to be prefixed, if the given number is an integer.

If the given number exceeds four figures, find the difference between the logarithms answering to the first four figures of the given number, and the next following logarithm; multiply this difference by the remaining figures in the given number, point off as many figures to the right-hand as there are in the multiplier, and the remainder, added to the logarithm, answering to the first four figures, will be the required logarithm, nearly.

EXPLANATION OF THE TABLES.

The logarithm of a vulgar-fraction is found by subtracting the logarithm of the denominator from that of the numerator; and that of a mixed quantity is found by reducing it to an improper fraction, and proceeding as before.

EXAMPLES.

I.

What is the logarithm of 59?

In the first page of the table, opposite to 59 is 1.77085, the logarithm required.

II.

Required the logarithm of 365?

Opposite to 365, and under 0, is 2.56229.

III.

Sought the logarithm of 7854?

Opposite to 785, and under 4, is 3.89509.

IV.

Required the logarithm of 186479?

The logarithm of 1864	-	-	is	-	-	27045
1865	-	-	is	-	-	27068
Difference	-	-		-	-	23
						79
						207
						161
Proportional part	-	-		-	-	18.17
Logarithm of 1864	-	-		-	-	.27045.
Logarithm of 186479	-	-		-	-	5.27063

V.

Required the logarithm of $\frac{9}{11}$?

Logarithm of 9	-	-	0.95424
of 11	-	-	1.04139
Logarithm of $\frac{9}{11}$	-	-	9.91285, or - 1.91285.

VI.

What is the logarithm of $7\frac{1}{8}$?

$7\frac{1}{8} = \frac{61}{8}$	-	log.	-	-	-	1.78533
	-	log.	-	-	-	0.90309
Logarithm of $7\frac{1}{8}$	-	-	-	-	-	0.88224

PROBLEM II.

To find the number answering to any given logarithm.

RULE.

Find the next less logarithm to that given in the column marked 0 at the top, and continue the sight along that horizontal line, and a logarithm the same as that given, or very near it, will be found; then the three first figures of the corresponding natural

number will be found opposite thereto in the side column, and the fourth figure immediately above it, at the top of the page. If the index of the given logarithm is 3, the four figures thus found are integers: if the index is 2, the three first figures are integers, and the fourth is a decimal, and so on.

If the given logarithm cannot be exactly found in the table, and if more than four figures be wanted in the corresponding natural number; then find the difference between the given and the next less logarithms, to which annex as many cyphers as there are figures required above four in the natural number; which divide by the difference between the next less, and next greater logarithms, and the quotient annexed to the four figures formerly found, will give the required natural number.

EXAMPLES.

I.

Required the natural number corresponding to the logarithm 2.79477?

This logarithm is found opposite to 623, and under 4; hence, since the index is 2, the corresponding number is 623.4.

II.

What is the number answering to the logarithm 5.13278?

The next less logarithm in the tables is .13258, answering to 1357; the difference between which and the given logarithm is 20, to which two cyphers being annexed, gives 2000: now, this divided by 32, the difference between the next less and next greater logarithms, the quotient is 62, which annexed to 1357, gives 135762, the number required.

PROBLEM III.

To perform *MULTIPLICATION* by *Logarithms*.

RULE.

Add the logarithms of the factors, and the sum is the logarithm of the product.

If there are negative and affirmative indices, their difference is to be taken; or rather use the arithmetical complements* of the negative indices, and reject tens from the sum of these indices.

EXAMPLES.

I.

Multiply 256 by 13?

Factors	{	256	-	log.	-	-	-	2.40824
		13	-	log.	-	-	-	1.11394
Product		3328	-	-	-	-	-	3.52218

* The arithmetical complement of the logarithm of any number, is found by subtracting the given logarithm from that of the radius, or by subtracting each of its figures from 9, except the last, or right-hand figure, which is to be taken from 10. The arithmetical complement of an index is found by subtracting it from 10.

II.

Multiply 17.8 by 0.4, and by 0.0065?

Factors	{	17.8	-	log.	-	1.25042, or	1.25042
		0.4	-	-	-	1.60206	9.60206
		0.0065	-	-	-	3.81291	7.81291
Product	-	0.04622	-	-	-	2.66539	8.66539

PROBLEM IV.

To perform DIVISION by Logarithms.

RULE.

From the logarithm of the dividend, subtract the logarithm of the divisor, the remainder is the logarithm of the quotient.

If one or both of the terms are less than unity, remove the decimal points till the factors contain whole numbers, and the dividend the greatest; then, if the dividend be more places removed than the divisor, remove the decimal point of the quotient as many places to the left hand; but if the divisor be more places removed, then remove the decimal point of the quotient as many places to the right hand. If the dividend and divisor be equally removed, the quotient is not to be altered.

EXAMPLES.

I.

Divide 1798 by 36?

Dividend	-	1798	-	log.	-	-	8.25479
Divisor	-	36	-	log.	-	-	1.55630
Quotient	-	49.94	-	-	-	-	1.69849

II.

Divide 8.42 by .96?

Dividend	-	8.42, removed deg.	842	-	log.	-	1.92531
Divisor	-	.96	-	96	-	-	0.98227
Quotient	-	-	-	8.771	-	-	0.94304

PROBLEM V.

To perform PROPORTION by Logarithms.

RULE.

From the sum of the logarithms of the second and third terms, subtract the logarithm of the first term, the remainder is the logarithm of the answer.

EXAMPLE.

I.

If a ship sails 15 knots in 2½ hours, how many miles will she run in 19 hours at the same rate?

As	2.5 hours	-	log.	-	-	0.39794
Is to	19. hours	-	-	-	-	1.27875
So is	15 miles	-	-	-	-	1.17609
To,	114 miles	-	-	-	-	2.05690

II.

A merchantman, distant 22 miles, going at the rate of $4\frac{1}{2}$ knots an hour, is pursued by a privateer, whose hourly rate of sailing is 6 knots; after two hours chase the breeze freshened, and the merchantman's rate was increased to 5.8 knots, and the privateer's to 8.4. In what time will the privateer come up with the merchantman?

As the privateer gained $1\frac{1}{2}$ miles an hour on the merchantman, at the end of the first two hours, the distance between them was 19 miles. During the remaining part of the chase, the hourly advance of the privateer was 2.6 knots. Therefore,

As the hourly rate	-	2.6	-	0.41497
Is to the distance	-	19.	-	1.27875
So is	-	1 hour	-	0.00000
<hr/>				
To the time required	-	7.308	-	0.86378

Hence, from the time the breeze freshened, the privateer would come up with the merchantman in 7 h. 18', or 9 h. 18' from the commencement of the chase.

PROBLEM VI.

To perform *INVOLUTION* by *Logarithms*, that is, to find the square, cube, &c. of any given number.

RULE.

Multiply the logarithm of the given number by the index of the power, and the product is the logarithm of the power sought.

EXAMPLES.

I.

What is the square of 58?

Given number	58	-	log.	-	-	1.76343
Index of the power		-	-	-	-	2
						<hr/>
Square	3364	-	-	-	-	3.52686

II.

2. What is the fourth power of 16?

Given number	16	-	log.	-	-	1.20412
Index of the power		-	-	-	-	4
						<hr/>
Fourth power	65536	-	-	-	-	4.81648

PROBLEM VII.

To perform *EVOLUTION* by *Logarithms*, that is, to extract any proposed root of any given number.

RULE.

Divide the logarithm of the given number by the index of the root, the quotient is the logarithm of the root.

If the given number is a decimal, and the arithmetical comple-

(B)

ment of the negative index used, prefix 1 to that index for the square-root, 2 for the cube-root, &c.

EXAMPLES.

I.

Required the square-root of 8464 ?

Given number	-	8464	-	-	-	3.92758
Square-root	-	92	-	-	-	1.96379

II.

Required the cube-root of 6896 ?

Given number	-	6896	-	-	-	3.83860
Cube-root	-	19.033	-	-	-	1.27953

PROBLEM VII.

To find the TONNAGE of a Ship by Logarithms, according to the common Method.

RULE.

If the vessel is a ship of war, let fall a perpendicular from the fore-side of the stem, at the height of the hause holes; but if a merchantman, the perpendicular is to be let fall from that part of the fore-side of the stem which is at the same height above the keel, as the wing transom: also let fall another perpendicular from the back of the main post, at the height of the wing transom. Find the distance between these two perpendiculars, from which subtract three-fifths of the extreme breadth; and also, the product of the height of the wing transom above the upper edge of the keel, by $2\frac{1}{2}$ inches, and the remainder is the length of the keel for tonnage. To the logarithm of which, add the logarithm of the breadth, and that of the half-breadth, and the constant logarithm 8.02687,* the sum, rejecting 10 from the index, will be the logarithm of the tonnage required.

EXAMPLE.

Let the length between the perpendiculars at the fore-part of the stem, and the back of the post, be 100 feet; the extreme breadth $27\frac{1}{2}$ feet, and the height of the wing transom 15 feet. Required the tonnage?

Length between the perpendiculars	-	-	-	100 feet	
Three-fifths extreme breadth	-	-	-	16.5	
Height, wing transom $15 \times 2\frac{1}{2}$, or =	-	-	-	3.125	
Sum	-	-	-	19.625	
Length of keel for tonnage	-	-	-	80.375	log. 1.90512
Extreme breadth	-	-	-	27.5	- 1.43983
Half extreme breadth	-	-	-	13.75	- 1.13830
Constant logarithm	-	-	-	-	- 8.02687
Tonnage	-	-	-	321.3	- 2.50962

* The arithmetical complement of the logarithm of 94, being the common divisor for finding the tonnage.

TABLE IX.

To reduce Points of the Compass to Degrees, and conversely.

This table is divided into six columns; in the two first and two last columns, the names of the several points and quarter-points of the compass are contained; the third column contains the corresponding number of points and quarter-points reckoned from the meridian; and the fourth column, the degrees, &c. answering thereto. The manner of using this table is obvious.

TABLE X.

Logarithmic Sines, Tangents, and Secants, to every Point and Quarter of the Compass.

In making calculations by logarithms relative to a ship's place, as deduced from the course and distance, &c. it will be found more convenient, if the course is given in points, to take the sine, &c. of it from this table, than to reduce the course to degrees, and take the sine, &c. of it from the following table.

The points and quarters are contained in the first and last columns, and the log. sines, tangents, and secants, in the intermediate columns.

TABLE XI.

Logarithmic Sines, Tangents, and Secants, to each Degree and Minute of the Quadrant.

This table contains the logarithms of the natural sines, tangents, and secants.

The degrees are numbered at the top of the table, in a direct order, from 0° to 45° ; and at the bottom of the table, in a retrograde manner, from 45° to 90° . The minutes are contained in the marginal columns; those in the left-hand column belonging to the degree at the top, and the minutes in the right-hand column belonging to the degree at the bottom of the page.

PROBLEM I.

To find the sine, co-sine, &c. answering to any given degree and minute.

RULE.

Find the given degrees at the top of the page, if less than 45° , and the minutes in the left-hand column; opposite to which, and under the word sine, co-sine, &c. is the quantity required. But, if the given degrees be between 45° and 90° , find them at the bottom, and the required sine, co-sine, &c. will be found above the word sine, co-sine, &c. opposite to the given number of minutes in the right-hand column.

(B) 2

If the given arch exceeds 90° , find the sine, co-sine, &c. of its supplement.

EXAMPLES.

I.

Required the log. sine of $23^\circ 28'$?

Under the word sine, in the page marked 23° at the top, and opposite to $28'$ in the left-hand column, is 9.60012, the sine of $23^\circ 28'$?

II.

Required the co-tangent of $57^\circ 9'$?

In the page marked 57° at the bottom, above the word co-tangent, and opposite to $9'$ in the right-hand marginal column, is 9.81003, the co-tangent of $57^\circ 9'$.

III.

What is the secant of $138^\circ 50'$?

The supplement of $138^\circ 50'$ is $41^\circ 10'$, the secant of which is 10.12332. Or, which is the same, the co-secant of $48^\circ 50'$, the excess of the given arch above 90° , is 10.12332, the secant of $138^\circ 50'$ as required.

PROBLEM II.

To find the sine, tangent, &c. of an arch expressed in degrees, minutes, and seconds.

RULE.

Find the sine, tangent, &c. answering to the given degree and minute, and also that answering to the next greater minute; multiply the difference between them by the given number of seconds, and divide the product by 60; then, the quotient added to the sine, tangent, &c. of the given degree and minute, or subtracted from the co-sine, co-tangent, &c. will give the quantity required, nearly.

If the arch be less than three degrees, it will be necessary to use the following rule:—

To the arithmetical complement of the given degrees and minutes reduced to seconds, add the logarithm of the given degrees, minutes, and seconds, reduced to seconds, and the log.-sine, tangent, &c. of the given degrees and minutes, the sum, rejecting 10 from the index, will be the log.-sine, tangent, &c. of the proposed number of degrees, minutes, and seconds.

EXAMPLES.

I.

Required the log.-sine of $15^\circ 2' 28''$?

EXPLANATION OF THE TABLES.

13

Log. sine of	15° 2'	-	-	9.41394
	15 3	-	-	9.41441
Difference	-	-	-	47
Seconds	-	-	-	28
				376
				94
				6.0) 131.6
				21.9 or 22 nearly.
Sine of	15° 2'	-	-	9.41394
Proportional part	-	-	-	22
Sine of	15° 2' 28"	-	-	9.41416

II.

Required the tangent of 1° 36' 23" ?

1° 36'	=	5760	-	ar. co. log	-	6.23958
1° 36' 23"	=	5783	-	log.	-	3.76215
1° 36'	-	-	-	tangent	-	8.44611
1° 36' 23"	-	-	-	tangent	-	8.44784

PROBLEM III.

To find the degrees and minutes answering to any given log. sine, tangent, &c.

RULE.

Find in its respective column, the nearest sine, tangent, &c. to that given, and take the degrees from the top or bottom of the page, according as the quantity is found in a column titled at the top or bottom, and the minute is found in the same horizontal line, in the left or right hand marginal columns, according as the quantity is found in a column titled at the top or bottom of the page.

EXAMPLES.

I.

Required the degrees and minutes answering to the log. sine 9.49768 ?

This is found in the column marked sine at the top, under 18 degrees, and opposite to 20 minutes.

II.

Required the degrees and minutes answering to the log. tangent 10.35416 ?

The nearest to this is found in the column titled tangent at the bottom, above 66 degrees, and opposite to 8 minutes.

PROBLEM IV.

To find the degrees, minutes, and seconds, answering to a given logarithmic sine, tangent, &c.

RULE.

Find the degrees and minutes answering to the next less logarithmic sine, tangent, &c., which subtract from that given; multiply the remainder by 60, and divide the product by the difference between the next less and next greater logarithms, and the quotient will be the seconds to be annexed to the degrees and minutes before found.

If the given logarithm is that of the sine or tangent of a small arch—then, to the arithmetical complement of the next less logarithm in the tables, add the given logarithm, and the logarithm of the degrees and minutes, in seconds, answering to the next less logarithm, the sum, rejecting radius, will be the logarithm of the number of seconds in the required arch.

EXAMPLES.

I.

Required the arch corresponding to the logarithmic sine 9.25486?

Given log. sine	-	-	9.25486,	next greater	9.25514
Next less	10° 21'	-	9.25445	-	9.25445
Difference	-	-	41	-	69

Now, 41 multiplied by 60", and divided by 69, the quotient is 36" nearly; hence the corresponding arch is 10° 21' 36".

II.

Required the arch answering to the log. tangent 8.31085?

The next less log. tangent in the table is 8.30888, which answers to 1° 10', the ar. co. of which is					
Given log. tangent	-	-	-	-	1.69112
Next less arch	1° 10'	=	4200"	- log.	8.31085
					3.62325
Required arch	1° 10' 19"	=	4219	-	3.62529

TABLE XII.

Traverse Table to Points and Quarters of the Compass.

In this table, the points and quarter points under 4 points, are contained at the top of the table; and those between 4 and 8 points, at the bottom. The first column contains the distance to 60 miles, the second column contains the difference of latitude, and the third the departure, if the course is less than 4 points; but if the course exceeds 4 points, the second column contains the departure, and the third the difference of latitude. The other columns are a continuation of the former, the distance being extended to 300 miles.

If the given distance exceeds 300 miles, collect the several differences of latitude and departures answering to the several distances, that make up the given distance. Thus, Let the course be $3\frac{1}{4}$ points, and the distance 573 miles.

To course $3\frac{1}{4}$ points, and dist. 300, the diff. of lat. is 241.0, and dep. 178.7
<div style="display: flex; justify-content: space-between; width: 100%;"> 273 219.3 162.6 </div>

Hence, to course $3\frac{1}{4}$ points, and dist. 573, the diff. of lat. is 460.3, and dep. 341.3

TABLE XIII.

Traverse Table to each Degree of the Quadrant.

This table is similar to the former in every respect, except that it is adapted to each degree of the quadrant, instead of each point and quarter point of the compass. The degrees under 45° are found at the top of the table, and those between 45° and 90° , at the bottom.

This table, besides its use in navigation, will serve as a general table of proportion, by finding the greatest of the two first terms of the proportion in a distance column, and the other in a latitude or departure column; then, opposite to the third, in a column of the same name with that in which the first term was found, will be the fourth term in a column of the same name as that in which the second term was found.

EXAMPLES.

I.

If a ship sails 8 miles in 3 hours, what distance will she run in a day; and in what time will she run 235 miles, the rate of sailing being supposed uniform?

Eight in a distance column will be found to correspond with 3 in a departure column, under 22° ; then, opposite to 24 in a departure column is 64 miles in a distance column; and opposite to 235 miles in a distance column is 88, or 3 d. 16 h. in a departure column.

II.

If a seaman receive 4 guineas per month of 30 days, what will his wages amount to in 3 months 7 days?

In three months, it is evident, the wages will amount to 12l. 12s. Now, for the proportional part answering to the 7 days, find 30 in a distance column, and turn over until 7 is found in a departure column. Under 13° 6.7 is found, and under 14° is 7.3; hence 7 would be found under $13^\circ\frac{1}{2}$. Now, under 13° , and opposite to 84 shillings = 4 guineas, is 18.9 in a departure column; and under 14° and opposite to 84 is 20.3, the mean 19.6 = 19s. 7d., which, added to 12l. 12s. the sum is 13l. 11s. 7d. the answer.*

* This might have been done, although not with the same degree of exactness, as follows:—In a departure column, 30 will be found opposite to 97 in a distance column, under 18° . Then, opposite to 84 in a departure column, is 272 in a distance column, which reduced to pounds, is 13l. 12s. the answer nearly.

TABLE XIV.

Meridional Parts.

This table contains the meridional parts answering to each degree and minute of latitude. The degrees are expressed at the top, and the minutes in the marginal column: under the degree, and opposite to the minute in any given latitude, are the meridional parts, and conversely.

This table is used in Mercator's Sailing, and in constructing charts, agreeable to Mercator's method of projection.

TABLE XV.

Dominical Letter.

It has been the custom, particularly among almanac makers, to denote the days in the year by the first seven letters of the alphabet; the same letter answering to the same day of the week in any year, and the first letter of the alphabet to the first day of the year. One of these letters must, therefore, denote all the Sundays throughout the year; and is hence called the Dominical Letter.* If Sunday is the first day of the year, A is the dominical letter; if the year begins on Saturday, B is the dominical letter, &c.

In this table, even hundreds of years are contained at the top, and the intermediate years in the four first columns; under the one, and opposite to the other, is the dominical letter or letters for the proposed year. If there are two letters, the first answers from the beginning of the year to about the end of February, and the other serves for the remaining part of the year. Every leap year has two dominical letters. By means of this and the following table, the day of the week answering to any given day of the month may be found; and conversely, if the day of the month be known within a few days. Also, the year, if known within certain limits, may be found from the day of the week and day of the month being given.

TABLE XVI.

To find the Day of the Week answering to any given Day of the Month, &c.

The first vertical column contains the several months in the year, and that part of the other columns immediately opposite, contains the dominical letters: the under part contains the days of the month on which the Sundays happen; and hence, the other days of the week are easily found.

* The dominical letters were introduced into the kalendar by the primitive Christians.

PROBLEM I.

Given the year, month, and day of the month, to find the corresponding day of the week.

RULE.

Find the dominical letter answering to the given year in table XV; then find this dominical letter in table XVI, on the same horizontal line with the given month, and under it are the several days of the month upon which the Sundays happen; and hence the day of the week is known.

EXAMPLE.

Upon what day of the week did the 18th of March, 1793, happen?

By table XV, the dominical letter is F: now find F on the same horizontal line with March, under which are 3. 10. 17. 24. 31, the several Sundays in that month: hence, since the 17th day of the month is Sunday, the 18th is Monday.

PROBLEM II.

Given the year, month, the day of the week, and day of the month nearly, to find the exact day of that month.

RULE.

Find the dominical letter for the given year by table XV, and the several Sundays in the month by table XVI; and, hence, the day of the month will be known.

EXAMPLE.

Whether was Thursday the 11th or 12th of March, 1795?

The dominical letter for 1795 is D; under which, in table XVI, on the line with March are 1. 8. 15. 22. 29, the Sundays in that month; hence, since the 8th day of the month is Sunday, Thursday will be the 12th.

PROBLEM III.

Given the month, the day of the month, and the day of the week, and the year nearly; to find the corresponding year.

RULE.

In table XVI, find the dominical letter answering to the given day of the week and day of the month; then find this letter near the proposed limits, and the required year will be found.

EXAMPLE.

A person was born on Wednesday the 17th of October, but is uncertain whether the year was 1758 or 1759, required the exact year.

As the 17th of October happened upon Wednesday, the preceding Sunday was the 14th. Now, above the 14th day of the month, and opposite to October is G. Then, in table XV, opposite to G is 1759, the year required.

TABLE XVII.

Refraction in Altitude.

A ray of light, from a heavenly body, in its passage through the atmosphere, describes a curve, which is convex towards that part of the heavens to which a tangent to the curve, at the extremity of it which meets the earth, would be directed. Hence, an object appears higher than it really is, and this apparent encrease of altitude is called the refraction.

The refraction is necessary for correcting altitudes of, and distances between the heavenly bodies, whether observed at sea or land. It is always to be subtracted from the observed altitude, or added to the zenith distance. This table is adapted to a mean state of the atmosphere in Britain, namely, to 29.6 inches of the barometer, and to 50° of Fahrenheit's thermometer. If the height of the mercury in these instruments be different from the mean, and if great precision is required, a correction is necessary to reduce the tabular to the true refraction. See the Author's Treatise on the Longitude, vol. i. page 82, and vol. ii. table VIII.

TABLE XVIII.

Parallax of the Sun in Altitude.

The difference between the places of the sun, as seen from the surface and from the centre of the earth at the same instant, is called the parallax of the sun in altitude.

This table contains the sun's parallax in altitude to every third degree. The parallax is always to be added to the apparent altitude, in order to obtain the true altitude. In observations of the sun taken at sea for the latitude, the parallax may be neglected; but for the longitude it must be taken into account.

TABLE XIX.

Correction of the Sun in Altitude.

The numbers in this table are the differences between the refraction and sun's parallax: these numbers are expressed in minutes and tenths of a minute, which is sufficiently accurate in computations for the latitude or apparent time. The correction is to be subtracted from the apparent altitude of the sun, in order to obtain the true altitude.

TABLES XX. AND XXI.

Dip of the Horizon.

The dip of the horizon is a vertical angle contained between a horizontal plane passing through the eye of an observer, and a line from his eye to the visible horizon.

The first of these tables contains the dip answering to a free or unobstructed horizon, and the numbers therein, as well as in the other table, corresponding to the height of the eye, are to be subtracted from the observed altitude when the fore-observation is used; but added thereto in the back observation. The dip in this table is expressed in minutes and tenths of a minute.

If the land intervenes, or a fog obscures the horizon, and the ship nearer to it than to the visible horizon when unconfined; and if the sun's limb is brought in contact with the line of separation of the sea and land, the dip will be considerably greater, and will encrease as the distance of the ship from the land diminishes. In this case, therefore, the distance of the ship from the land is to be found, and the dip answering thereto, and to the height of the eye, above the water, is to be taken from table XXI. Or the dip may be found independent of this table, by the rule given in the Author's Treatise on the Longitude, vol. i. page 290.

TABLE XXII.

Semi-diameter of the Sun.

This table contains the angle subtended by the sun's semi-diameter at the earth, for every sixth day of the year. The months and days are contained in the first column, and the semi-diameter of the sun, expressed in minutes and tenths of a minute in the second column. This table being intended only for correcting the sun's altitude for the latitude, or finding the apparent time, it is, therefore, given in the same terms as the three preceding tables.

TABLE XXIII.

Augmentation of the Moon's Semi-diameter.

The apparent magnitude of an object encreases as the distance from the observer diminishes: and, since the moon is nearer the observer when in the zenith, than when in the horizon, by the earth's semi-diameter: therefore, the moon's semi-diameter encreases with its altitude; and this encrease is called the *augmentation* of the moon's semi-diameter. This table contains the augmentation to every third degree of altitude.

TABLE XXIV.

Declination of the Sun.

This table contains the sun's declination for the noon of each day, under the meridian of Greenwich, for four successive years. The declination is expressed in degrees and minutes.

TABLE XXV.

Reduction of the Sun's Declination to a future Period.

It has been customary to title a table of the sun's declination, so as to have the appearance of answering for several years, which is evidently fallacious. The present table is intended to reduce that of the sun's declination to a subsequent period. In the side column of the table are periods of 4, 8, &c. years to 20; and the months and each sixth day are at the top, opposite to the one, and under the other is the corresponding change of declination, which is to be added or subtracted, according as the sign above is + or —. If the time for which the sun's declination is required, be previous to the 28th February, 1800, the declination answering to the day following that given is to be taken.

EXAMPLES.

I.

Required the sun's declination 1st April, 1817?

The given year is 12 years after 1805.

Now, Sun's declination 1st April, 1805	-	-	4° 29' N
Equation to 12 years, table XXV.	-	-	+ 2
Sun's declination 1st April, 1817	-	-	4 31 N

II.

What is the sun's declination 17th October, at noon, anno 1826?

The given year is 20 years after the year 1806.

Now, Sun's declination 17th October 1806	-	-	9° 7' S
Equation to 20 years, table XXV.	-	-	+ 3
Sun's declination 17th October, 1826	-	-	9 10 S

The correction of declination may be found independant of the table, as follows :—

From the given year subtract as many times 4, as will reduce it to one of the years to which the table is adapted, and take out the declination answering to the given time as before; find also the declination answering to the following day, and multiply the difference between them by one-fourth of the difference between the given and tabular years, and the product divided by 33, will give the correction; which is additive when the declination is increas-

ing, and subtractive when decreasing. If the given time is prior to that in the tables, the correction is to be applied in a contrary manner.

EXAMPLE.

Required the sun's declination, 12th March, 1827?

The given year is 24 years after 1803. Now the sun's declination 12th March, 1803, is $3^{\circ} 34'$, and on the following day $3^{\circ} 11'$, the difference is $23'$. Then, $23'$ multiplied by 6, the number of fours in 24, gives 138, which, divided by 33, the quotient is 4, the correction; which, subtracted from $3^{\circ} 34'$, because the declination is decreasing, gives $3^{\circ} 30'$, the sun's declination 12th March, 1827.

TABLE XXVI.

Reduction of the Sun's Declination to a different Meridian.

This table is intended to reduce the sun's declination, as given in the preceding table, to any other meridian than that of Greenwich, to which it is adapted, and to any given time of the day under that meridian. The arguments of this table are the ship's longitude, the time from noon, and the month and day of the month: the first of these is at the top of the table, the second at the bottom, and the month and day in the marginal columns. The titles at the top and bottom of these columns direct when the reduction is to be added or subtracted.

TABLE XXVII.

Right Ascensions and Declinations of the principal Fixed Stars.

This table contains the right ascensions and declinations of 61 principal fixed stars, adapted to the beginning of the year 1805. The fourth and sixth columns contain the annual variation in right ascension and declination, arising from the procession of the equinoxes, and combined with the proper motions of the stars: these serve to reduce the place of a star to a period, a few years after or before the epoch of the table, with tolerable accuracy. When the place of a star is wanted after the beginning of 1800, the variation in right ascension is additive, and that in declination is to be applied according to its sign. The contrary rule is to be used when the given time is before 1805.

The stars marked with an asterisk, are those used in the Nautical Almanack, for the purpose of determining the longitude by lunar observations.

TABLE XXVIII.

The Right Ascension of the Sun.

This table is adapted to leap year, particularly the year 1804. In order to adapt this table to common years, one minute is to be

subtracted from the right ascension in the table, the first after leap year, two minutes the second after leap year, and three minutes the third year after leap year. And in the months of January and February, the right ascension is to be taken for the day following that given.

This table is chiefly employed in nautical purposes, to find the time of transit of a fixed star; which is necessary to be known when the latitude is wanted from an observation of the meridian altitude of the star. And hence, also, the time of rising and setting of a star may be found; half the time of its continuance above the horizon being given.

PROBLEM I.

To find the apparent time of transit of a known fixed star.

RULE.

From the right ascension of the star, encreased by 24 hours, if necessary, subtract that of the sun, the remainder will be the approximated time of the transit of the star over the meridian of Greenwich: to this time apply the longitude, in time, of the given place, by addition or subtraction, according as it is west or east, which call the *reduced time*. Now, if the reduced time is less than three hours, the approximated time is the apparent time of transit of the star over the meridian of the place of observation. If the reduced time is between three and nine hours, one minute is to be subtracted from the approximate time: if between nine and fifteen hours, two minutes; if between fifteen and twenty-one hours, three minutes; and if above twenty-one hours, four minutes are to be subtracted from the approximate time, in order to obtain the apparent time of transit.

EXAMPLE.

Required the apparent time of transit of Rigel, 21st December, 1804, in longitude 45° W?

Right ascension Rigel	-	5 ^h 5'							
Sun's right ascension	-	17 58							
<hr/>									
Approximate time of transit		11 7	-	-	-	-	-	11 ^h 7'	
Longitude in time	-	8							
<hr/>									
Reduced time	-	14 7,	Subtract	-	-	-	2		
<hr/>									
Apparent time of transit	-	-	-	-	-	-	11 5		

PROBLEM II.

To find the apparent time of the rising and setting of a known star, the latitude and day of the month being given.

RULE.

Find the apparent time of the transit of the star by the preceding problem; then, find half the time of the continuance of the star

above the horizon, by table XLIV; which, being applied to the time of transit, by subtraction and addition, will give nearly the apparent times of the rising and setting of the star respectively.

Those who wish more exactness, are referred to the Author's Treatise on the Longitude, vol. ii.

EXAMPLE.

Required the apparent time of the rising and setting of Arcturus at London, 1st June, 1805?

Right ascension, Arcturus	-	-	-	-	-	14 ^h 7
Right ascension of Sun	-	-	-	-	-	4 35
Approximate time of transit	-	-	-	-	-	9 32
Subtract	-	-	-	-	-	2
Apparent time of transit	-	-	-	-	-	9 30
To latitude 51° 31' N, and declin. 20° 13' N, the half cont. of star above the horizon, is	-	-	-	-	-	7 50
Time, nearly, of rising	-	-	-	-	-	1 40
of setting	-	-	-	-	-	17 20, or
5 ^h 20', in the morning of the 2d of June.						

TABLE XXIX:

The Equation of Time.

This table contains the equation of time for leap-year, and is particularly adapted to the year 1804. By this table, however, the equation of time may be found for other years, as follows:—For the first year after leap-year, take one-fourth of the difference between the equations for the given and preceding days, which is to be added to the equation for the given day, if at that time the equation is decreasing, but subtracted therefrom if it is encreasing. In the second after leap-year, take half the difference between the equations; and in the third take three-fourths of the difference, and apply this correction in the same manner as before.

Time, as deduced from observations of the sun, is called *apparent time*, to which, the equation of time being applied according to its title in the table, gives *mean time*. And, since a watch, or time-keeper, is constructed upon the assumption of an uniform or equable motion, it is hence obvious this table is particularly useful in ascertaining the rate of a watch on mean solar time. Also, if a watch be regulated to mean time, then, the instant when the sun's meridian altitude ought to be observed, in order to find the latitude, is known by applying the equation of time to twelve hours, with a contrary title to that in the table.

TABLE XXX.

To reduce the Time of the Passage of the Moon over the Meridian of Greenwich to the Time of its Passage over any other given Meridian.

This table is useful in finding the latitude from the meridional altitude of the moon, and in computing the apparent time, from the altitude of the moon, when observed off the meridian. The arguments of this table are, the daily retardation of the moon in passing the meridian, at the top, the time from the moon's southing in the left-hand marginal column; and the longitude of the place in the right-hand column. The corresponding equations are to be added, if the given time is after that of the moon's passage over the meridian, or if the longitude is west; but, if the time is before that of the moon's passage, or if the longitude is east, these equations are to be subtracted.

TABLE XXXI.

Error of Observation, arising from an Inclination of the Axis of the Telescope, or Line of Sight, to the Plane of the Sextant.

If the line of sight is not parallel to the plane of the instrument, the observed angle will be greater than the truth; and this excess will encrease with that inclination, and with the angle observed: This table contains the error of observation arising from the above cause within probable limits, which error is always to be subtracted from the observed altitude of an object, or from the observed distance between two objects.

TABLE XXXII.

Correction of the Moon in Altitude.

As this table is intended to be used in correcting the observed meridian altitude of the moon, in order to find the latitude, the numbers in it are, therefore, given only to the nearest minute, which is sufficiently exact for the above purpose. This correction is always to be added to the observed altitude to obtain the time.

TABLE XXXIII.

Acceleration of the Fixed Stars.

The time of transit of a fixed star advances each day $3' 55''.9$, on mean solar time. Hence, in an observatory, the rate of a watch or clock may be accurately determined, by observing the transits of the fixed stars. Or, this may be done tolerably exact, by observing the instant of the disappearance of a star, during several successive nights, behind a fixed object, nearly in the meridian, the

position of the eye of the observer being also fixed. For this purpose, therefore, the first part of this table contains the acceleration of the fixed stars for 30 days. The second part of the table is useful for converting sidereal into mean solar time; or the converse, with sufficient accuracy for most nautical purposes.

TABLE XXXIV.

Natural Sines.

This table is inserted here purposely for finding the latitude by double altitudes of the sun. The manner of taking out the natural sine answering to any given degree and minute, and conversely, is obvious. This table may be successfully applied in the solution of many problems, a few of which are the following.

PROBLEM I.

Given the course and distance run, to find the difference of latitude and departure.

RULE.

Multiply the natural sine, and natural co-sine of the course, by the distance; the products, pointing off five figures to the right hand, will be the departure and difference of latitude respectively.

EXAMPLE.

A ship sailed S.S.W. 150 miles, required the difference of latitude and departure?

Nat. sine of 2 points, or $22^{\circ} 30'$.38268,	Natural co-sine	-.92388
Distance	150		150
Departure	57.40200,	Diff. of latitude	138.58200

PROBLEM II.

To find the product of two given numbers by the table of Natural Sines.

RULE.

Annex as many cyphers to the greater of the two given numbers as will make it consist of five places of figures; and to the less annex the same number of cyphers. Now, these numbers being considered as natural sines, find the degrees and minutes answering to each. Then, half the difference, or half the sum of the natural co-sines of the sum and difference of these arches, according as the sum is less or greater than a quadrant, will be the product required.

EXPLANATION OF THE TABLES.

EXAMPLE.

Required the product of 272 by 86?

27200	Nat. sine	-	15° 47'			
8600	Nat. sine	-	4 56			
<hr/>						
Sum	-	-	20 43	Nat. co-sine	-	93534
Difference	-	-	10 51	Nat. co-sine	-	98212
<hr/>						
	Difference	-	-	-	-	4678
	Four first figures of product	-	-	-	-	2339

PROBLEM III.

Given the latitude of a place, the altitude and declination of the sun, to find the apparent time of observation.

RULE.

If the latitude and declination are of different names, let their sum be taken, otherwise their difference: then, from the natural co-sine of this sum or difference, subtract the natural sine of the corrected altitude of the sun, and find the log. of the remainder; to which add the log. secants of the latitude and declination: the sum of these being found in table XXXVII, will be the time from noon when the sun's altitude was observed; and hence the apparent time is known.

EXAMPLE.

The 11th January, 1799, in latitude 57° 7' N, at 11h. 2' 43" A. M. per watch, the true altitude of the sun's centre was 10° 10', and declination 21° 46' S. Required the apparent time, and error of the watch?

Latitude	-	57° 7' N.	-	-	secant	-	-	0.26596
Declination	-	21 46 S.	-	-	secant	-	-	0.03212
<hr/>								
Sum	-	78 53	Nat. co-sine	19281				
Altitude	-	10 10	Nat. sine	17651				
<hr/>								
	Difference	-	-	-	1630	log.	-	3.21219
<hr/>								
Sun's dist. from meridian		0h 58' 26"	-	-	Rising	-	-	3.50957
<hr/>								
Apparent time	-	11 1 34						
Time per watch	-	11 2 43						
<hr/>								
Watch fast	-	-	1 9					

PROBLEM IV.

Given the latitude, the apparent time, and sun's declination, to find the true altitude of the sun.

RULE.

Take the logarithm answering to the sun's distance from the meridian, from table XXXVII, to which add the log. co-sines of

the latitude and declination; their sum, rejecting 20 from the index, is the log. of a natural number, which, subtracted from the natural co-sine of the difference between the latitude and declination, if of the same name, or from the natural co-sine of their sum, if of different names, will give the natural sine of the true altitude of the sun's center.

The refraction being added to, and the parallax subtracted from the true altitude, will give the apparent altitude of the sun's center.

EXAMPLE.

Required the true and apparent altitudes of the sun at Newcastle, 17th October, 1802, at 8 h. 44' 20". A. M.

Apparent time	-	8h 44' 20"				
Sun's dist. from meridian	-	3 15 40	-	-	rising	4.53371
Latitude	-	55 3 N.	-	-	co-sine	9.75805
Declination	-	9 3 S.	-	-	co-sine	9.99456
Sum	-	64 6	Nat. co-sine	43680		
				19334		4.28632
True altitude sun	-	14° 5' 27"	Nat. sine	24346		
Refraction	-	+ 3 43				
Parallax	-	- 8				
Apparent alt. sun's center		14 9 2				

TABLES XXXV, XXXVI, XXXVII.

Half Elapsed Time, Middle Time, and Rising.

The tables are employed in the computation of the latitude of a ship at sea, the latitude by account, two observed altitudes of the sun, the interval of time between them, and the sun's declination being given: they may also be applied in the solution of various other problems, as in the computation of the apparent time, the true azimuth of an object, the altitude and longitude of the nonagesimal, &c.

Table XXXV contains the log. co-secant of half the interval between the observations, and is hence called a table of HALF ELAPSED TIME. Table XXXVI. is named a table of MIDDLE TIME, and contains the log. sines of the corresponding arches, each diminished by 4.69897, the log. of half the radius. And table XXXVII. intitled a table of RISING, contains the log. versed sine of the corresponding arch, its index being diminished by 5. These tables are adapted to each tenth second of time, as far as six hours. And the rules for the several computations, which may be performed by them, may be so contrived, that any farther extension becomes unnecessary.

TABLES XXXVIII, XXXIX, XL.

To find the Correction of the Computed Latitude.

These tables are intended to find the correction of the latitude computed by double altitudes, in that case where more operations than one become necessary. The two first tables were drawn up by Mr. Brinkley; Professor of Astronomy, Dublin; and, together with their investigation, have been given in the Nautical Almanack for several successive years. The form of these tables is altered a little from the original, with a view to render them more easy to those seamen who are not well acquainted with decimal fractions.

TABLE XLI.

Proportional Logarithms.

This table was first constructed for the express purpose of facilitating the method of finding the apparent time at Greenwich, answering to a given central distance between the moon and the sun, or a fixed star, by the assistance of the Nautical Almanack, for which purpose it is excellently adapted. It is extended to three hours, upon account of the distance being given in the Ephemeris to every three hours apparent time. As degrees and hours are similarly divided, it therefore equally answers for degrees.

This table is very useful in many calculations, especially those where sexagesimals are concerned.

TABLE XLII.

For computing the final Effect of Parallax on the Distance between the Moon and the Sun, or a Fixed Star.

This table, as its title implies, is used in finding the last correction of the computed distance between the moon and the sun, or a fixed star. See Navigation. It may also be applied to several fluxionary calculations.

TABLE XLIII.

Amplitudes of a Celestial Body, reckoned from the Meridian.

The usual method of reckoning the amplitude is from the east or west points; however, as the azimuth is reckoned from the meridian, and as the amplitude may be called the *horizontal* azimuth; it is, therefore, evidently more proper, to reckon both either from the meridian, or from the east or west points. In this table the amplitude is reckoned from the meridian; and, therefore,

if the declination is north, the amplitude is to be reckoned from north; but if the declination is south, the amplitude is to be reckoned from the south, towards the east or west, according as the object is rising or setting. This table is extended to $23\frac{1}{2}$ degrees of declination, being the greatest declination of the sun, and to each degree of latitude as far as 60 degrees.

Upon account of the horizontal refraction, and the height of the eye above the water, the sun or a star, when in the true horizon, appears above it by a quantity equal to the sum of the horizontal refraction, and the dip of the horizon answering to the height of the observer above the water. If, therefore, the amplitude of the sun be observed when the center of that object is apparently in the horizon, a correction becomes necessary, which may be found by the following rule.

To the log. tangent of the latitude, add the log. co-secant of the true amplitude, reckoned from the meridian, and the log. of the sum of the horizontal refraction and dip of the horizon, the sum, deducting 20 from the index, will be the log. of the correction of amplitude of the sun or a fixed star. When the latitude and declination of the object are of the same name, the correction is to be added to the observed amplitude, in order to obtain the corrected amplitude; but when of a contrary name, it is to be subtracted therefrom. Or the correction being applied to the true amplitude, as found in the table, or by calculation, by addition or subtraction, according as the latitude and declination are of a contrary or of the same denomination, will give the apparent amplitude.

If the observed object is the moon, then the sum of the horizontal refraction and dip is to be subtracted from the moon's horizontal parallax, and the remainder is to be used in the preceding rule: and the correction thus found is to be applied in a contrary manner to the former.

EXAMPLES.

I.

Required the apparent amplitude of the sun at rising, answering to latitude $55^{\circ} 0' N$, sun's declination $12^{\circ} 0' N$, and height of the eye 10 feet?

To latitude $55^{\circ} 0'$, and declination $12^{\circ} 0' N$, the true amplitude is $N 68^{\circ} 46' E$.

Horizontal refraction	-	-	33'			
Dip to 10 feet	-	-	3			
Sum	-	-	36			
Latitude	-	-	$55^{\circ} 0'$	log.	-	1.55630
True amplitude	-	-	$N 68^{\circ} 46' E$.	tangent	-	0.15477
				co-secant	-	0.03058
Correction	-	-	55	log.	-	1.74160
Apparent amplitude	-	-	$N 67^{\circ} 51' E$.			

II.

Required the apparent amplitude of the moon at setting, in latitude 48° N, the moon's declination being 20° S, horizontal parallax $58'$, and height of the eye 18 feet?

With the given latitude and declination, the true amplitude found in the table is $S\ 59^{\circ}\ 15'\ W.$

Horizontal refraction	-	-	33'			
Dip to 18 feet	-	-	4			
Sum	-	-	37			
Moon's horizontal parallax	-	-	58			
Difference	-	-	21	log.	-	1.32222
Latitude	-	-	48 0	tangent	-	0.04356
True amplitude	-	-	$S\ 59\ 15\ W.$	co-secant	-	0.06580
Correction	-	-	27	log.	-	1.49358
Apparent amplitude	-	-	$S\ 58\ 48\ W.$			

When the latitude and declination are expressed in degrees and parts of a degree, it will, when accuracy is wanted, be more expeditious to find the true amplitude by the common rule than by the table, thus:—the log. co-sine of the true amplitude is equal to the sum of the log. secant of the latitude, and the log. sine of the declination, rejecting 10 from the index.

TABLE XLIV.

Half the Time of Continuance of an Object above the Horizon, the Latitude and Declination being of the same Name; or half the Time of Continuance under the Horizon, the Latitude and Declination being of a contrary Name.

This table contains the time of the semi-duration of an object above the horizon, when its declination is of the same name with the latitude of the place of observation; or the time of half its continuance under the horizon, when the latitude and declination are of a contrary denomination. Hence, if the object whose rising or setting is required, is the sun, this table gives the time of setting of that object, when the latitude and declination are of the same name, and the time of rising when of contrary names.* But, in

* The time of the rising and setting of the sun may be found independent of the table, by the following rule. To the tangent of the latitude, add the tangent of the declination; the sum, rejecting radius, will be the log. co-sine of an arch, which, reduced to time, will be the time of the rising, the latitude and declination being of the same name, or the time of setting if of different names.

order to obtain the time of rising and setting of a fixed star or planet, the time of its culminating or passing the meridian must be first found. The method of finding the time of transit of a fixed star is shown in the explanation of table XXVI, and that of a planet may be found by the Nautical Almanack, page iv of the month. Now, to the time of transit of the given object, its semi-diurnal arch answering to its declination, and to the latitude of the place of observation, being applied by subtraction and addition, will give the time of rising and setting of the object.

The time of rising and setting, as found by this table, requires a correction, depending on the latitude and declination, and on the aggregate of the horizontal refraction, dip of the horizon, and horizontal parallax, which may be found as follows.

1. The object being the sun,* or a fixed star.

Find the sum and difference of the natural co-sine of the declination, and natural sine of the latitude, and take half the sum of the logarithms of these quantities; to which add the constant log. 1.1761, and the prop. log. of the sum of the horizontal refraction and dip of the horizon, the sum, rejecting 10 from the index, will be the prop. log. of the correction, which is to be added to the time of rising, and subtracted from that of setting, as found by the table, in order to obtain the time of the apparent rising and setting of the object.

2. If the object be the moon.

The difference between the moon's horizontal parallax, and the sum of the horizontal refraction and dip, is to be used in the preceding rule, in place of the last quantity: and the correction thus found is to be applied in a contrary manner to that for the sun or a fixed star; the moon's horizontal parallax being the greater quantity.

TABLE XLV.

Apparent Time of Transit of Pole Star.

This table is adapted to leap year, particularly 1804. In order to make it serve for other years, the time of transit must be taken for the day following that given in the months of January and February. For the first year after leap year, one minute is to be added to the time of transit given in the table; two minutes for the second, and three minutes for the third after leap year.

* The sun's parallax is here neglected, as its effect in this case is almost insensible.

Again, to reduce this table to a different meridian than that to which it is adapted, viz. Greenwich; if the longitude is between 45° E, and 45° W, there is no correction to be applied. If the longitude is between 45° and 135° E, one minute is to be added; but if it is between 45° and 135° W, one minute is to be subtracted. If the longitude is between 135° E, and 180° , two minutes are to be added, but subtracted if the given longitude is between 135° W, and 180° .

This table is useful to find the time when the altitude of the pole star ought to be observed, to find the latitude by its meridian altitude; it is also useful in finding the variation of the compass by the pole star.

TABLE XLVI.

Difference of Altitude of the Pole Star and the Pole, at different distances of the Star from the Meridian.

As the pole star is generally known, that no opportunity, therefore, may be lost for determining the latitude, this table is inserted, the use of which is as follows:—

Find the interval between the time of observation of the altitude of the pole star, and that of its passing the meridian,* and take out the corresponding equation from the table; which added to, or subtracted from the true altitude of the pole star, will give the latitude of the place of observation.

EXAMPLES.

I.

Let the corrected altitude of the pole star be $46^{\circ} 10' N$, observed 8h. 30' before its passage over the meridian. Required the latitude?

True altitude of the pole star	-	-	-	-	$46^{\circ} 10' N$.
Equation from table XLVI. to 8h. 30'	-	-	-	+	1 5
Latitude	-	-	-	-	$47 15 N$.

II.

At 1 h. 10' after the passage of the pole star over the meridian, its altitude corrected was $58^{\circ} 51' N$. Required the latitude?

True altitude of the pole star	-	-	-	-	$58^{\circ} 51' N$.
Equation from table XLVI. to 1 h. 10'	-	-	-	-	1 42
Latitude	-	-	-	-	$57 9 N$.

* If this interval is expressed in mean solar time, it ought to be reduced to sidereal time. This may be done with sufficient accuracy for most purposes, by adding the proportional part from table XXXIII, part 2d.

TABLE XLVII.

To find the Distance of Objects at Sea.

In this table, no allowance is made for terrestrial refraction, upon account of its uncertainty, as it varies, according to General Roy, from one-third to one-twenty-fourth part of the intercepted arch. Hence, the distance given by this table, will always be less than the apparent distance between the objects.

The distance between any two objects whose heights are given, is found by adding the distances answering to the given heights.

EXAMPLES.

I.

At a place 104 feet above the level of the sea, with a telescope, a small portion of the main-top-gallant sail of a ship, which had sailed the day before, was observed apparently above the horizon. Now, the height of that part of the sail, which appeared in the horizon, above the sea, is 165 feet, the distance of the ship is required?

To height 104 feet, the distance is	-	-	10.84
165 feet, the distance is	-	-	18.66
Distance of the ship	-	-	24.50 miles.

II.

The upper part of a light-house, whose height above the sea is 68 feet, was observed in the horizon, the height of the eye being 14 feet. Required the distance of the light-house?

To height 68 feet, the distance is	-	-	8.77
14 feet, the distance is	-	-	3.98
Distance of the light-house	-	-	12.75 miles.

REMARKS.

I.

If the given height exceeds the limits of the table, find the distance answering to one-fourth, one-ninth, one-sixteenth, &c. of the given height; which being multiplied by 2, 3, 4, &c. accordingly, will give the required distance.

EXAMPLE.

Let the height of a mountain be 9400 feet; required the distance when its top will be just visible, the eye being supposed to be in the horizon?

(E)

One-fourth of 9400 feet is 2350, opposite to which in the table is 51.55 miles, which multiplied by 2 is 103.1 miles, the distance.

II.

If the ratio of the horizontal refraction to the distance be given, the apparent distance will be obtained by increasing the distance found by the table accordingly.

EXAMPLE.

The peak of Teneriff was observed in the horizon by a person 150 feet above the surface of the sea; required the distance, the height of the peak being assumed to be 13280, and the terrestrial refraction one-tenth of the intercepted arch?

As the given height exceeds the limits of the table, let, therefore, one-sixteenth of it be taken, which is 830, opposite to which in the table is	30.26
Which multiply by 4, the square root of 16	4
Distance answering to 13280 feet	121.04
Distance to 150 feet	13.02
Distance uncorrected by refraction	134.07
One-tenth	13.41
Distance corrected by refraction	147.46

III.

The distance given in this table is expressed in nautical miles, of which 60 are contained in one degree: and there are 69.1 English miles in the same portion of the meridian. If, therefore, the distance is required in English miles, to the constant logarithm 0.06133 add the logarithm of the given distance in nautical miles, and the sum will be the logarithm of the distance in English miles.

EXAMPLE.

Let the distance expressed in nautical miles be 147½. Required the distance in English miles?

Constant logarithm	-	-	-	0.06133
Distance in nautical miles	-	147.5	-	log. 2.16879
Distance in English miles	-	169.9	-	2.23012

IV.

The distance being given, the height is easily found; being the converse of the preceding operation.

TABLE XLVIII.

To convert Degrees, &c. into Time, and conversely.

In column first of this table, are contained degrees and minutes, and in the second column the corresponding hours and minutes, or minutes and seconds: the other columns, titled D, are a continuation of the first; and those titled H, M, a continuation of the second. The manner of using this table will be obvious from the following examples.

EXAMPLES.

I.

Reduce $69^{\circ} 23'$ to time?

Opposite to	69°	in column 3d is	-	$4^h 36'$
to	$23'$	in column 1st is	-	$1 32''$
Hence	$69 23$	=		$4 37 32$

II.

Convert $5^h 46' 24''$ to degrés?

Opposite to	$5^h 44'$	in column 4th is	-	$86^{\circ} 0'$	in col. 2d
to	$2' 24''$	in column 2d is	-	36	in col. 1st
Hence	$5 46 24$	=		$86 36$	

TABLES XLIX. AND L.*

To find the Meridian Altitude of an Object, and hence the Latitude, from the Altitude observed a few Minutes before or after the Time of Transit of the Object.

In consequence of the interposition of clouds, it frequently happens that the sun, or other celestial objects, are observed when on the meridian. If, however, the altitude has been observed a few minutes before or after the time of the object's transit, the meridian altitude, and consequently the latitude of the place of observation, may be found by means of these tables, by the following

* See Longitude, vol. ii. p. 254. Coleccion de Tablas, por Don Joseph de Mendoza y Rios. Madrid 1800. p. 87, &c.

RULE.

Find the number in table XLIX, answering to the latitude by account, and the declination of the object, which, if the sun, is to be reduced to the meridian of the given place. Multiply this number by that from table L, answering to the given interval between the time of observation and noon, the product will be the difference between the observed and meridian altitudes, in seconds; which, reduced to minutes, and added to the observed altitude, the sum will be the meridian altitude; and hence, the latitude is found by the common rule.

REMARK.

The interval between the time of observation and noon, may be found by equal altitudes, by a time-keeper, &c.

EXAMPLES.

I.

April 22d, 1805, in latitude about 20° N, and longitude by account 65° E, the observed altitude of the sun's lower limb, $9^{\circ} 51''$, after its passage over the meridian, was $81^{\circ} 36' S$, and height of the eye 30 feet: required the latitude?

Sun's declination at noon, at Greenwich	-	-	-	-	$12^{\circ} 8' N.$
Equation to 65° E.	-	-	-	-	$- 4$
Declination at noon, in longitude 65° E.	-	-	-	-	$12 4 N.$
Number from table XLIX, to latitude 20° , and decl. $12^{\circ} 4'$	-	-	-	-	$13''$
Number from table L, to the given interval $9^{\circ} 51''$	-	-	-	-	97
Product	-	-	-	-	$1261 = 21'$
Observed altitude, sun's lower limb	-	-	-	-	$81 36 S.$
Semi-diameter	-	-	-	$+ 16\frac{1}{2}$	$+ 11$
Dip and refraction	-	-	-	$- 5\frac{1}{2}$	
True altitude	-	-	-	-	$81 48$
Difference between the observed and meridian altitudes	-	-	-	-	$+ 21$
Meridian altitude	-	-	-	-	$82 9 S.$
Zenith distance	-	-	-	-	$7 51 N.$
Declination	-	-	-	-	$12 4 N.$
Latitude	-	-	-	-	$19 55 N.$

II.

February 28th, 1806, in latitude 24° S. by account, the correct altitude of Sirius, seven minutes before the time of its transit, was $82^{\circ} 14' N.$ Required its meridian altitude, and the latitude of the place of observation?

Number from table XLIX, to latitude 24° , and decl. $16^{\circ} 28'$	$12^{\circ} 7'$
Number from table L, to interval $7'$	49
Product	$622.3 = 10'$
Altitude of Sirius	$82^{\circ} 14'$
Meridian altitude of Sirius	$82^{\circ} 24' N.$
Zenith distance	$7^{\circ} 36' S.$
Declination	$16^{\circ} 28' S.$
Latitude	$24^{\circ} 4' S.$

TABLE LI.

To reduce the Longitude, Latitude, Right Ascension, Declination, Semi-diameter, and Horizontal Parallax of the Moon, as given in the Nautical Almanack, to any given Meridian, and to any given Time under that Meridian.

This table might have been greatly contracted:—to prevent, however, any ambiguity to those not much acquainted with the method of taking out proportional parts, it is given in its present extended form. The proportional part answering to any given variation in twelve hours, is found by adding the parts answering to the several quantities that make up the whole difference in that period; which sum is to be added to the longitude, or right ascension of the moon at the preceding noon or midnight, rejecting 360° if either exceeds that quantity. And it is to be applied by *addition* or *subtraction*, to the latitude, declination, semi-diameter, and horizontal parallax of the moon, according as these quantities are *increasing* or *decreasing*.

EXAMPLES

I.

Required the moon's longitude, the 16th February, 1806, at 7 h. 36' P. M.?

Moon's longitude, 16th February, 1806, at noon	$10^{\circ} 4^{\circ} 0' 10''$
at midnight	$10^{\circ} 9' 56'' 16''$
Variation in 12 hours	$5^{\circ} 56' 6''$
Proportional part to 7 h. 36', an/ $5^{\circ} 0' 0''$ Table LI.	$3^{\circ} 10' 0''$
_____ $0^{\circ} 50' 0''$	$31^{\circ} 40'$
_____ $0^{\circ} 56' 0''$	$3^{\circ} 48'$
_____ $0^{\circ} 06'$	$4''$
Proportional part to $5^{\circ} 56' 6''$ is	$3^{\circ} 45' 32''$
Moon's longitude, 16th February, at noon	$10^{\circ} 4^{\circ} 0' 10''$
Moon's longitude at 7 h. 36' P. M.	$10^{\circ} 7^{\circ} 45' 42''$

II.

Required the moon's horizontal parallax, the 11th March, 1806, at 5 h. 12' A. M. in longitude 58° W.?

The given time is between the 10th at midnight, and the 11th at noon. Hence,

Moon's horizontal parallax, 10th March, at midnight	-	55' 36"
11th March, at noon	-	55 17

Variation in twelve hours	-	-	-	-	19
---------------------------	---	---	---	---	----

Proportional part to 5 h. 12', and	-	10"	-	4"
		9		4

Proportional part to 5 h. 12', and	-	19	-	8
------------------------------------	---	----	---	---

Proportional part to 58° , and	-	10	-	3
		9		3

Proportional part to 58° , and	-	19	-	6
---	---	----	---	---

Sum	-	-	-	-	14"
-----	---	---	---	---	-----

Moon's horizontal parallax at midnight	-	-	-	-	55 36
--	---	---	---	---	-------

Moon's horizontal parallax, at 5 h. 12', in longitude 58°	-	-	-	-	55 22
--	---	---	---	---	-------

Or,

Given time	-	-	-	-	5 ^h 12'
------------	---	---	---	---	--------------------

Longitude in time	-	-	-	-	3 52
-------------------	---	---	---	---	------

Reduced time	-	-	-	-	9 4
--------------	---	---	---	---	-----

Proportional part to 9 h. 4' and 19", is 14" as before.

REMARKS.

I.

It is evident these operations may be much contracted, by taking out two or more of the proportional parts at once.

II.

This table will also be useful in reducing the sun's longitude, right ascension, and declination, to a given time and meridian, by finding the proportional part answering to the reduced time, and half the variation of the sun's motion in twenty-four hours.

TABLE VII.

Equation of Second Difference.

If the motion of the moon in twelve hours was uniform, the place of that object, as deduced by the preceding table, would be correct. The motion of the moon, however, in twelve hours is almost always unequal; and, therefore, a correction becomes ne-

cessary—which correction is contained in this table, of which the arguments are, the mean of the two second differences of the moon's motion at the top, and the apparent time after noon or midnight in the side columns. This equation must be added to, or subtracted from the proportional part of the first difference of the moon's motion in twelve hours, found by the preceding table, according as that difference is decreasing or encreasing. Hence, the corrected proportional part, answering to the given interval, will be obtained.

If the given second difference is not found in the table, the sum of the equations answering to the several terms which make up the second difference, is to be taken.

EXAMPLES.

I.

Required the moon's latitude, 13th April, 1806, at 2 h. 11' 36", A. M. apparent time under the meridian of Greenwich?

		First diff.		Second diff.		Mean.
Moon's lat.	12th at noon	3° 5' 10"	— 24' 0"	— 2' 12"		
—	12 at midnight	3 29 10	— 21 48	— 2 24		— 2' 12"
—	13 at noon	3 50 58	— 19 24			
—	13 at midnight	4 10 22				

The difference of latitude between the 12th at midnight, and the 13th at noon, is 21' 48"; hence

The proportional part to 2h. 11' 36",	and	20' 0"	is	3' 40"
—	—	1 0	-	11
—	—	0 40	-	7
—	—	0 8	-	1

Therefore, proportional part to 2h. 11' 36", and	21 48	is	3 59
Equation of second difference to 2h. 11' 36", and	2' 0"	is	+ 9
—	0 18	-	+ 2

Proportional part corrected	-	-	4 10
Moon's latitude, 12th April, 1806, at midnight	-	-	3 29 10
Moon's latitude, 13th April, at 2h. 11' 36", A. M.	-	-	3 33 20 N

II.

Required the moon's declination, 16th July, 1806, at 3 h. 42', P. M. apparent time under the meridian of Greenwich?

		First diff.		Second diff.		Mean.
Moon's decl.	15th July, at midnight	19° 21'	— 2° 1'	— 18'		
—	16 at noon	17 20	— 2 19	— 14		— 16'
—	16 at midnight	15 1	— 2 33			
—	17 at noon	12 28				

The first difference in the given interval is $2^{\circ} 19'$. Hence,

Proportional part to	3 h. 42'	and	$2^{\circ} 0'$	-	is	-	$0^{\circ} 37'$
			0 19	-	-	-	0 6
Proportional part to	3 h. 42'	and	2 19	-	-	-	0 43
Equation of second difference to 3 h. 42', and mean second diff.						16	2
Proportional part corrected							0 41
Moon's declination, 16th July, at noon							17 30
Moon's declination, 16th July, at 3 h. 42' P. M.							16 39

TABLE LIII.

Altitude to be observed, in order to ascertain the Apparent Time with the greatest Accuracy.

As the change of altitude is quickest when the object is in the prime vertical, the most proper time for observing an altitude, from which the apparent time is to be inferred, is, therefore, when the object is due east or west; other errors are, also, in this case avoided, particularly that arising from an error in the latitude by account at the time of observation. This table contains the altitude of an object, when in the above position. The declination is marked at the top, and the latitude of the place of observation in the side column.

Altitudes under 3° should not be employed in the computation of the apparent time, upon account of the uncertainty of the refraction near the horizon. During one-half of the year, or while the sun is on the other side of the equator, with respect to the observer, the sun is not due east or west while above the horizon; in that case, therefore, the observations for ascertaining the time must be taken while the sun is near the horizon; the altitude, however, not being less than 3° , for the reason assigned above.

EXAMPLE.

June the 1st, 1806, in latitude 50° N, by account, intending to ascertain the apparent time from observations of the sun, the altitude when that observation is to be made, that the apparent time may be inferred with the greatest accuracy, is required?

The sun's declination the 1st of June is 22° , under which, and opposite to 50° , the given latitude is $29^{\circ} 17'$, the required altitude.

TABLE LIV.

Hyperbolic Logarithms.

The logarithms in this table are of the kind first calculated by Baron Napier, and are called Hyperbolic Logarithms, upon account of their application to the determination of the quadrature of the asymptote spaces of the right-angled hyperbola. These logarithms are eminently useful in finding fluents, the sums of infinite series, &c.

The logarithm of any number in the regular progression, from 1.00 to 10.00, and from 10 to 1000, is found directly in the table; and the logarithm of any other number, not exceeding seven figures, may be found by the following rules.

PROBLEM I.

To find the Hyperbolic Logarithm of any given number.

FIRST.

If the given number is found in the table, the corresponding logarithm is that required.

SECOND.

If the given quantity consists of a whole number, with a decimal annexed; and the integral part within the limits of the table.

RULE.

Find the sum and difference of the given number, and the next less number in the table; then, the difference being divided by half the sum, and the quotient added to the hyperbolic logarithm of the next less number, the sum will be the hyperbolic logarithm of the given number.

THIRD.

If the given number exceeds 1000.

RULE.

Let the three left-hand figures be considered integers, and the remaining figures decimals, and find the corresponding hyperbolic logarithm; to which add 2.3025851, the hyperbolic logarithm of 10, if the given number consists of 4 places of integers; 4.6051702, if it consists of 5 places; 6.9077553, if it consists of 6 places; 9.2103404, if it consists of 7 places of integers; carrying on the addition of the multiples of the hyperbolic logarithm of 10, according as the given number consists of more places of integers, and the sum will be the hyperbolic logarithm required.

EXAMPLES.

I.

Required the hyperbolic logarithm of 3.1415926?

The next less tabular number is 3.14, the sum of which, and the given number 3.1415926, is 6.2815926, and the half is 3.1407963; also the difference of the two first numbers is .0015926. Now, this difference being divided by half the sum, the quotient is 0.0005071, which added to 1.1442228, the hyperbolic logarithm

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of the next less number 3.14, the sum 1.1447299 is the hyperbolic logarithm of the given number 3.1415926.

II.

Required the hyperbolic logarithm of 365.24222?

Given number	-	365.24222			
Next less tab. number	-	365.			
Difference	-	.24222			
Sum	-	730.24222,	half	365.12111	log. - 9.38421
					log. - 2.56244
Proportional part	-	-	-	0.0006634	- 6.82177
Hyperbolic log. of	365.	-	-	5.8998974	
Hyperbolic log. of	365.24222	=	-	5.9005608	

III.

Required the hyperbolic logarithm of 785.398?

Given number	-	785.398			
Next less num. in table	-	785.			
Difference	-	.398			
Sum	-	1570.398	half	785.199	log. - 9.59988
					log. - 2.89498
Proportional part	-	-	-	0.0005069	6.70490
Hyperbolic log. of	785.	-	-	6.6656837	
Hyperbolic log. of	785.398	-	-	6.6661906	
Add	-	-	-	6.9077553	
Hyperbolic log. of	785.398	=	-	13.5739459	

PROBLEM II.

To find the number answering to any given Hyperbolic Logarithm.

RULE.

If the given logarithm is found in the table, the corresponding number is that required.

If the given logarithm is greater than 4.6051702, and less than 6.9077553.

Find the difference between the given, and the next less logarithm in the table; which being multiplied by twice the number answering to the next less logarithm, and divided by the excess of 2. above the given difference, will give the decimal to be annexed to the number answering to the next less hyperbolic logarithm to that given.

If the given hyperbolic logarithm is between 2.3025851 and 4.6051702, encrease it by 2.3025851, find the corresponding number, and remove the decimal point one place to the left. If less than 2.3025851, encrease it by 4.6051702, find the number answering thereto, and remove the decimal point two places to the left.

If the given hyperbolic logarithm is between 6.9077553 and 9.2103404, subtract 2.3025851 therefrom, find the number as before, and remove the decimal point one place to the right. If it is between 9.2103404 and 11.5129255, the log. 4.6051702 is to be

subtracted from it, and the decimal point is to be removed two places to the right, in the corresponding natural number.

The natural number answering to any given hyperbolic logarithm may be found as follows:

Multiply the sum of 2. and the difference between the given and next less tabular logarithms, and divide the product by the excess of 2. above the said difference, the quotient will be the required natural number. Observing, that if the given logarithm is without the limits of the table, it is to be reduced thereto, by applying the logarithm 2.3025851, or its multiples, as before.

EXAMPLES.

I.

Required the natural number answering to the hyperbolic logarithm 5.9005608?

Given hyperbolic logarithm	-	-	-	5.9005608
Next less, which answers to	-	365.	-	5.8998974

Difference	-	-	-	-	0.0006634
Constant number	-	-	-	-	2.

Excess of 2 above the difference	-	-	-	1.9993366
----------------------------------	---	---	---	-----------

Now, multiply 0.0006634 by 730, the double of 365, divide the product by 1.9993366, and the quotient .24222, annexed to 365, the sum 365.24222 is the number answering to the given hyperbolic logarithm.

Or, Difference	-	-	0.0006634
Constant number	-	-	2.

Sum	-	-	2.0006634
Difference	-	-	1.9993366

Sum	-	-	2.0006634
Next less tab. num. multiply by	-	-	365

100038170
120039804
60019902

Difference	1.9993366	730,2421410	(365.24222. Number required,
		59980098	

130441161
119960196

104809650
99966890

48428200
39986732

84414680
79973464

44412160
39986732

44254280
39986732

42675480
39986732

2688748

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REMARK.

The above is inserted at full length, according to the common method of operation, but might have been greatly contracted. The easiest method, however, of finding the proportional part, according to the first rule, is by using common logarithms. Thus,

Difference of given and next less hyp. logs	0.0006634	log.	6.82178
Double l.o. answering to next less hyp. log.	730.	log.	2.86332
Sum			9.68510
Excess of 2. above the difference	1.9993366	log.	0.30089
Proportional part	0.24222		9.38421
Next less tabular number	365.		
Number required	365.24222		

II.

Required the number answering to the hyperbolic logarithm of 13.5739459?

The given logarithm is without the limits of the table, therefore,

From the given logarithm	13.5739459		
Subtract	6.9077558		
Remainder	6.6661906		
Next less log. which answers to 785	6.6656837	785 log.	2.89487
Difference	0.0005069	log.	6.70492
Constant number	2.	log.	0.30103
Excess of 2 above the difference	1.9994931	ar. co. log.	9.69908
Proportional part	398		9.59990
Next less tabular number	785.		
Number	785.398		

But, in order to bring the given hyperbolic logarithm within the limits of the table, it was diminished by three times the hyperbolic logarithm of 10, therefore, the decimal point must be removed three places to the right-hand; hence, the number answering to the given hyperbolic logarithm is 785398.

TABLE LV.

To reduce Common to Hyperbolic Logarithms, and conversely.

In many operations it is necessary to reduce common to hyperbolic logarithms, and conversely; and therefore this table is inserted. The manner of using it will be obvious from the following problems.

PROBLEM I.

To find the Hyperbolic Logarithm answering to a given Common Logarithm.

Divide the given common logarithm into periods of three figures each, beginning at the left, including the index, and annexing a cypher, if necessary, to the two right-hand figures, to make that period complete; then take out the hyperbolic logarithms answering to the several periods, and the sum will be the hyperbolic logarithm answering to the given common logarithm.

EXAMPLE.

Required the hyperbolic logarithm, answering to the common logarithm 0.4971498?

The given logarithm, divided into periods of three figures, beginning at the left-hand, with a cypher annexed to make the last period complete, will be as follows: 049. 714. 980. Now,

The hyperbolic log. of the	First period	049.	is	1.12826670
	Second period	.714	-	1644045
	Third period	.980	-	2256
				<hr/>
Hyperbolic logarithm of	-	0.4971498	=	1.14472971

PROBLEM II.

To find the Common Logarithm answering to a given Hyperbolic Logarithm.

RULE.

From the given hyperbolic logarithm, subtract the next less in the table, and take out the corresponding common logarithm. From the remainder subtract the next less hyperbolic logarithm, and find the corresponding number which is to be annexed to the former; and in this manner proceed, and the sum will be the corresponding common logarithm.

EXAMPLE.

Required the common logarithm, answering to the hyperbolic logarithm 5.90056075?

Given hyp. log.	-	5.90056075		
Next less hyp. log.	-	5.89461784	Corresponding com. log.	256
		<hr/>		
Remainder	-	594291		
Next less hyp. log.	-	594067	common log.	258
		<hr/>		
Remainder	-	224		
Next less hyp. log.	-	223	common log.	097
		<hr/>		
Common logarithm required	-		-	2.56258097

TABLE LVI.

Lengths of Circular Arches.

This table is useful in finding the length of an arch of a circle, containing any number of degrees, and of a given radius, and conversely. The manner of using it will be obvious from the following examples.

EXAMPLES.

I.

Required the length of the circular arch of a bridge, containing $42^{\circ} 24'$, the radius being 66 feet?

Length to	$42^{\circ} 0'$	-	0.7330383
Length to	24	-	69813
<hr/>			
Length to	$42^{\circ} 24'$	-	0.7400196
Radius	-	-	66
<hr/>			
4.4401176			
<hr/>			
44.401176			
<hr/>			
Length	-	-	48.8412936 = 84 feet 10 inches.

II.

Let the length of a circular arch, whose radius is 50 feet, be 46.9842650: Required the number of degrees it contains?

The length, 46.9842650, divided by 50, is .9396853			
Next less	-	-	.9250245 Correspond. arch 53°
<hr/>			
Remainder	-	-	146608
Next less	-	-	145444
<hr/>			
Remainder	-	-	1164
Next less number, which agrees	-	-	1164
<hr/>			
Hence, the corresponding arch is	-	-	53 50 24

III.

The span of a bridge is 80 feet, height, or versed sine of the circular arch 25 feet. Required the length, and number of degrees contained in the arch?

The radius = $\frac{40^2}{25} + 25 = 64 + 25 = 89$.			
Now, half span	-	40	-
Radius	-	89	-
<hr/>			
Half arch	-	24 12	-
<hr/>			
Whole arch	-	48 24	-
Length of arch of	-	$48^{\circ} 0'$	to radius 1. -
	-	0 24	-
<hr/>			
Length of arch of	-	48 24	-
Radius	-	-	-
<hr/>			
7.6026537			
<hr/>			
67.579144			
<hr/>			
Length of arch	-	-	75.1817977

TABLE LVII.

Reciprocals of Numbers.

This table contains the quotients of unity, divided successively by the series of natural numbers, from 1 to 1000, extended to seven places of decimals, except those which terminate within that period, as the reciprocals of 2. 5. 8. &c.

By this table, vulgar fractions are expeditiously converted into decimal fractions of the same value: it is also useful in various other calculations.

In order to reduce a vulgar fraction to a decimal, by this table, multiply the reciprocal of the denominator of the given fraction by its numerator.

EXAMPLES.

I.

Reduce $\frac{3}{17}$ to a decimal?

The reciprocal of 17 is	-	-	-	-	-	-	0.0588235
Numerator	-	-	-	-	-	-	3
Decimal of $\frac{3}{17}$	-	-	-	-	-	-	0.1764706

II.

Required the decimal of 5s. 3d. in terms of £. 1?

5s. 3d. reduced to a vulgar fraction, is $\frac{21}{80}$.	Now the reciprocal of 80 is	0.0125
Numerator	-	21
Decimal of 5s. 3d. is	-	0.2625

TABLE LVIII.

Square Roots of Numbers.

In this table the square roots of all whole numbers under 1000 are contained: by it, however, the square roots of other numbers may be found nearly, by common proportion, or more exactly by the method of interpolation.

If the given number, whose root is wanted, consists of any number in the table with cyphers annexed, its square-root is found directly in the table, by removing the decimal point towards the right, half as many figures as there are cyphers annexed.

Thus, the square-root of	9700.	is	98.488578,
of	975000000	is	31224.9900.

TABLE LIX.

Cube Roots of Numbers.

This table contains the cube-roots of all whole numbers under 300, and is extended to six places of decimals: its use is obvious from what has been said in the explanation of the preceding table.

TABLE LX.

Amount of £.1, at Compound Interest.

This table contains the amount of £.1, at the several rates of 3, 3½, 4, 4½, and 5 per cent. compound interest being allowed; and is extended as far as 60 years. The amount of any other given sum is found by multiplying the amount of £.1, found in the table at the given rate per cent., and for the given time by the proposed sum.

EXAMPLE.

Required the amount of £.750, for 50 years, at 4½ per cent. ?

Amount of £.1 for 50 years, at 4½ per cent. is - - - 909968
 Given sum - - - - - 750

451.63150
 6322.841

Amount - - - - - £. 6774 9 5⅓
 Or £. 6774 9 5⅓

TABLE LXI.

Present Value of £.1, for Years, at Compound Interest.

The present value of £.1, from 1 to 60 years inclusive, and at various rates per cent., compound interest being allowed, is contained in this table. The present value of any given sum, payable at the expiration of any number of years less than 60, is found by multiplying the present value of £.1, for the given number of years, at the proposed rate per cent., by the given sum or principal.

EXAMPLE.

Required the present value of £.2500, payable 50 years hence, 5 per cent., compound interest being allowed ?

By the table, the present value of £.1 payable at the expiration
 of 50 years, at 5 per cent. is - - - .087204

Given principal - - - - - 2500

43.602000
 174.408

Present value - - - - - £. 218.010000

TABLE LXII.

Amount of an Annuity of £.1, for Years, at Compound Interest.

By this table, the amount of an annuity for any given time and rate, within the limits of the table, is found by the following rule.

Take out the amount of £.1, answering to the given time and

rate of interest; which multiplied by the given annuity, the product will be the required amount.

EXAMPLE.

Required the amount of an annuity of £.200, in 10 years, at 5 per cent. compound interest?

Amount of £.1, in 10 years, at 5 per cent.	-	-	-	12.57789
Annuity	-	-	-	200
Amount	-	-	-	<u>2515.57800</u>

TABLE LXIII.

Present Value of an Annuity of £.1, Compound Interest.

This table contains the present value of an annuity of £.1, for complete years as far as 60, and at various rates of interest. The use of this table in finding the present value of any given annuity for a number of years, and at a rate of interest within the limits of the table, is as follows:—

PROBLEM I.

To find the value of an annuity for a given number of years, at a given rate of interest, the annuity commencing immediately.

RULE.

Multiply the tabular number, answering to the given years and rate of interest, by the given annuity, and the product will be the present value required.

EXAMPLE.

Required the present value of an annuity of £.20, which is to continue 50 years, rate of interest 5 per cent.?

Under 5, and opposite to 50, is	-	-	-	18.25593
Annuity	-	-	-	20
Present value	-	-	-	<u>365.11860</u>

PROBLEM II.

When the annuity does not commence till after a certain number of years.

RULE.

Multiply the difference between the tabular numbers answering to the time of commencement and end, at the proposed rate of interest, by the given annuity, the product will be the present value required.

EXAMPLE.

An annuity of £.40 per annum is to commence 20 years hence,
(G)

and is to continue 30 years : required its present value, the rate of interest being 4 per cent.?

Under 4, and opposite to 20, is	-	-	-	19.59033
50, is	-	-	-	21.48218
Difference	-	-	-	7.89185
Given annuity	-	-	-	40
Present value	-	-	-	£. 315.67400

TABLE LXIV.

The Annuity which £.1 will purchase, Compound Interest being allowed.

The manner of using this table is obvious from what has been said relative to the preceding tables.

EXAMPLE.

A person intends to lay out £.500 in the purchase of an annuity to continue 10 years, the rate of interest being 5 per cent. Required the annuity?

Under 5, and opposite to 10 years, is	-	-	-	.129504
Given principal	-	-	-	500
Annuity	-	-	-	£. 64.752000

TABLE LXV.

Probabilities of Life at different Places.

This table exhibits the probabilities of life at different places, and is necessary for the calculation of annuities upon lives at these places. The number of persons born at the same time, are here reduced to the same number, viz. 1000, for the sake of more readily comparing the number of persons alive at different places, at any given age. Thus, at the age of 40 years, out of 1000 persons born at the same place at the same time, there will be 214 alive at London, and 369 alive at Edinburgh : hence Edinburgh is more favourable for human life than London.

The probability or chance, that a person of a given age shall continue in existence any proposed number of years, is easily found by this table, being expressed by a fraction, whose denominator is the number of persons alive at the present age, and numerator, the number alive at the age to which it is proposed to attain; and the chance of dying before the person reaches that period is a fraction, having the same denominator as before, and whose numerator is the difference between the numbers alive at the two ages. Thus, the probability that a person, residing in London, aged 30, shall live 20 years longer, or attain the age of 50, is $\frac{177}{272}$, or as 13 to 7 nearly; and the chance of his dying before he attains that age is expressed by $\frac{177}{272}$, or as 13 to 6 nearly.

TABLES LXVI, LXVII, LXVIII.

For finding the Value of Annuities on Single and Joint Lives.

These tables were constructed by that ingenious mathematician, Mr. Thomas Simpson of Woolwich, upon the London bills of mortality. Their use is explained in the following problems.

PROBLEM I.

To find the Value of an Annuity for a given Single Life, at a proposed rate of Interest, within the limits of the Table.

RULE.

From table LXVI, take the number answering to the given age and proposed rate of interest, which multiplied by the given annuity, the product will be the required value.

EXAMPLE.

Required the value of an annuity of £.50, upon a single life, aged 40 years, according to the London bills of mortality, the rate of interest being reckoned at 4 per cent.?

The value of an annuity of 1l. for 40 years, at 4 per cent. is	-	11.5
Annuity	-	50
Value	-	£. 575.0

PROBLEM II.

To find the Value of an Annuity for Two Joint Lives.

RULE.

Multiply the number in table LXVII, answering to the given ages, and at the proposed rate of interest, by the given annuity, and the product will be the required value.

EXAMPLE.

Required the value of an annuity of £.60 for two joint lives, the one being 30, and the other 40 years, interest 4 per cent.?

The number answering to 30 and 40 years, and 4 per cent. is	-	8.8
Annuity	-	60
Value	-	£. 528.0

PROBLEM III.

To find the Value of an Annuity for the Longest of two given Lives.

RULE.

Proceed as directed in last problem, using the number from table LXVIII, and the product will be the value.

EXAMPLE.

What is the value of an annuity of £.20 for the longest of two lives, the one 25 and the other 40 years, interest 4 per cent.?

(G 2)

The tabular number answering to the given years and rate of interest	16.5
Annuity	20.
Value	330.0

Those who wish farther information on this subject, may consult Dr. Halley's Tracts in the Philosoph. Transactions, Baron Masceres's Treatise on Annuities, Simpson's Select Exercises, Smart's Tables of Interest, De Moivre on the Valuation of Annuities, Dr. Price on Reversionary Payments, Morgan's Doctrine of Annuities and Assurances on Lives, &c.

TABLES LXIX, LXX, LXXI, LXXII, LXXIII, LXXIV, LXXV.

These tables will be found very useful to Land-surveyors: the manner of using the four first is so obvious as to require no explanation. By table LXXIII, a distance measured on an inclined plane, may be reduced to horizontal measure, as follows:

Multiply the number in table LXXIII, answering to the given inclination of the plane, by the measured distance; subtract the product (four figures being previously pointed off to the right-hand) from the given distance, and the remainder will be the horizontal distance.

EXAMPLE.

A distance of 6 chains, 57 links, was measured on an inclined plane, the angle of inclination being $13^{\circ} 20'$. Required the horizontal measure?

The reduction to $13^{\circ} 20'$ is .027, which multiplied by 657, the product is 17.737, or 17.7, which subtracted from 657, the remainder is 639.3, the horizontal measure required.

Table LXXIV may be applied to determine the angle contained, between two stations, from a given point: and table LXXV contains the quantity, expressed in inches and decimal parts of an inch, which is to be subtracted from that point on the rod belonging to a levelling instrument, to which the horizontal hair of the telescope of a level is directed, when properly adjusted, that the point may be obtained, which is on a level with the axis of the telescope. In order to render this table more generally useful, it is adapted both to the English and Scots chains.

TABLE LXXVI.

Properties of the Platonic Bodies.

A regular solid is that which is contained by like, equal, and regular plane figures, and whose solid angles are all equal: of these there are only five, and they are called *Platonic* bodies from the ancient philosopher Plato. By this table, the surface, solidity, &c. of any of these bodies may be very easily found, as follows:

PROBLEM I.

To find the Surface and Solidity of a Platonic Body.

RULE.

Multiply the number under *surface* corresponding to the given body, by the square of the diameter, the product will be the superficial content; and the number under *solidity* multiplied by the cube of the diameter will give the solid content required.

EXAMPLE.

Required the superficial and solid content of a dodecaedron, whose side is 10 feet?

Tabular surface	-	20.6457788	-	solidity	-	7.6691189
Square of 10	=	100	-	cube	-	1000
Surface	-	2064.57788	-	solidity	-	7663.1189

PROBLEM II.

Given the Diameter of a Sphere, to find the Side of a Platonic Body, that may be inscribed in the Sphere, circumscribed about it, or that is equal to the Sphere.

RULE.

Multiply the corresponding number in the table by the diameter of the sphere, and the product will be the side required.

EXAMPLE.

Required the side of an octaedron that may be circumscribed about a sphere, whose diameter is 20 inches?

Tabular number	-	1.22474
Given diameter	-	20
Side required	-	24.49480

The converse, &c. of these problems may also be easily resolved by means of this table.

TABLE LXXVII.

Areas of Regular Polygons.

This table contains the areas of all regular polygons, from the trigon to the dodecagon inclusive; the side of each being 1. When the side is any other quantity, the area is found by multiplying the tabular number corresponding to the given polygon, by the square of the side of the proposed polygon. Thus, if the side of a pentagon be 50 yards, its area is = $1.7204774 \times 2500 = 4301.193$.

TABLE LXXVIII.

To reduce English to French Measure, and conversely.

By part first of this table, English measure is reduced to French measure, as used before the revolution; and by part second, French measure is reduced to English. The numbers in column first may represent inches, feet, yards, toises, &c. and column second contains

the corresponding French measure, expressed in inches and decimals of an inch, feet and decimals of a foot, &c. The other two columns are similar to the former. The use of this table will be obvious from the following examples.

I.

The height of the mercury in the barometer is 30.415 inches English measure: required its height in French measure?

30.	inches	=	28.14918
.4	-	-	.37532
.01	-	-	.09383
.005	-	-	.00469
<hr/>			
Hence	30.415	=	28.62302 = 28 in. 7 lines .476.

II.

How many fathoms are equal to 57069 toises?

By Part II.	50000	=	59287.5
	7000	=	7460.2
	60	=	63.9
	9	=	9.6
<hr/>			
Hence	57069 toises	=	60821.2 fathoms.

TABLE LXXIX.

Containing the Measures of the principal Lines and Angles, in regular Fortresses, from Four to Twelve Sides inclusive.

By this table the magistral line of a regular fort may be drawn, or any part of that line, as a bastion, &c.

TABLE LXXX.

To reduce the Divisions of the Nintey-six Arch of an Astronomical Quadrant, to Degrees.

The limb of an astronomical quadrant commonly contains two distinct sets of divisions; in one of which the quadrantal arch is divided into 90 degrees, as usual, and in the other into 96 equal parts; which last, upon account of the particular method of dividing it, is always considered as the most accurate. Each of these primary divisions is divided into 8 equal parts, and each of these is divided into 32 equal parts by a subdividing scale; and the difference, in seconds, between the two nearest divisions on the limb and subdividing scale, is found by a micrometer screw. The use of this table, therefore, is to reduce these divisions to degrees, which will be evident from the following example.

Let the apparent zenith distance of the sun's upper limb, by the nintey-six arch be $59^{\circ} 6' 8'' + 4\frac{1}{2}''$; required the corresponding number of degrees, &c.?

59	=	55 ⁰ 18' 45."0
6	=	42 11.2
8	=	1 45.5
4 ¹ .5	=	4.5
<hr/>		
Hence	59 6 8 + 4 ¹ .5	= 56 2 46.4

TABLE LXXXI.

Climates.

A climate is a portion of the surface of the earth, contained between two circles parallel to the equator, and of such a breadth that the length of the longest day at the parallel nearer the pole, exceeds that of the longest day at the parallel next the equator, by some assigned portion of time.

At the equator the day is always of the same length, namely, 12 hours. At the polar circles, the length of the longest day is 24 hours; and at the poles it is six months: hence, climates are distinguished into two kinds, namely,

HOUR AND MONTH CLIMATES.

The hour climates, therefore, begin at the equator, and end at the polar circles. Now, as the length of the longest day at the extremity of an hour climate nearest the pole, exceeds the length of the longest day at the beginning, or other extremity of that climate by half an hour; and since from the equator to the polar circles, there is an encrease of 12 hours in the length of the longest day; there are, therefore, 24 climates between the equator and each polar circle, and hence 48 hour climates in all.

From what has been said, it is evident, the first hour climate begins at the equator, and ends at that parallel where the length of the longest day is 12 h. 30', which is also the beginning of the second; and the second ends at that parallel where the length of the longest day is 13 hours, which is the commencement of the third; and so on to the polar circle, where the hour climates end, and the month climates begin.

The month climates begin at the polar circles, and end at the poles: the length of the longest day at the beginning of one climate exceeding that at the beginning of the next, by a month, or 30 days. Since the length of the longest day at the pole is six months, there are, therefore, six month climates between each polar circle and its respective pole; and, therefore, 12 month climates in all.—Hence, the number of hour and month climates together amount to 60.

In table LXXXI are contained the climates; column first contains the number of the climate; the second column, the length of the longest day at the end of each climate; the third, the latitude of the parallel bounding the end of the climate; and the fourth column, the breadth of each climate.

As all the tables of climates hitherto published, which the Author has had an opportunity of consulting, are erroneous; it was, therefore, thought proper to compute this table, which the reader may verify by the following methods of computation.

I.

For Hour Climates.

To the log. co-sine of half the length of the longest day at the end of any climate, add the log. co-tangent of $23^{\circ} 28'$, the sun's

greatest declination, the sum, rejecting radius, will be the log. tangent of the latitude required.

EXAMPLE.

Required the latitude of that parallel at the end of the 4th climate?

The length of the longest day at the end of the fourth climate is 14 hours; the half is 7 hours, which, reduced to degrees, is 105° .

Now, half the length of the longest day in degrees	$105^{\circ} 0'$	co-sine	9.41300
Sun's greatest declination	23 28	co-tang.	0.36239
Latitude	30 48	tang.	9.77539

II.

For Month Climates.

To the log. co-sine of half the sun's motion in longitude in the given interval, add the sine of the obliquity of the ecliptic, the sum, rejecting radius, will be the co-sine of the required latitude.

Or, let half the number of days in the given climate be reckoned both ways from the time of the solstice; then, the complement of the mean of the declinations of the sun on these days, will be the latitude.

EXAMPLE.

Required the latitude of that parallel when the third month climate ends?

The length of the longest day, at the end of the third climate, is three months, or 90 days; the half of which, being subtracted from, and added to the 21st of June, gives May 7th and August 5th. Now, the difference between the longitude of the sun on these days is $2s\ 26^{\circ} 4'$, the half is $1s\ 13^{\circ} 3' = 43^{\circ} 3'$

Half sun's motion in long.	43° 3'	co-sine	9.86377
Obliquity of ecliptic	23 28	sine	9.60012
Latitude	73 5	co-sine	9.46387
Or, Sun's declination,	May 7th	16° 57½'	
	August 5th	16 52½'	
Mean		16 55	
Latitude		73 5.	

REMARK.

The latitudes of the parallels bounding the month climates in the southern hemisphere, will differ from those in the northern hemisphere.

TABLE LXXXII.

To find the Number of Days contained between any Two Days of the Year.

This table is useful for many purposes, particularly in finding the interest for any given interval, and in various astronomical calculations. The manner of using this table is, by subtracting the number of days answering to the given day of the preceding month, from those answering to that of the following month, increased by 365 days, if necessary; observing, that if the preceding time be before, and the following after the end of February, in leap years, the above interval is to be increased by one day.

EXAMPLES.

I.

Required the number of days between the 10th February and the 23d August, 1804?

Number of days answering to 23d of August	-	-	235
to 10th of February	-	-	41
Interval	-	-	194
Add, because 1804 is leap year	-	-	1
Interval	-	-	195

II.

Required the number of days between the 21st September 1804, and the 18th March 1805?

Number to 18th March is 77, to which add 365, the sum is	-	442
Number to 21st September, is	-	264
Interval	-	178

TABLE LXXXIII.

Containing the Number of Days between the Old and New Styles, in different Periods.

The first column of this table contains years before Christ, and the second, the number of days of difference between the styles. The other columns are a continuation of the former. Those days having the sign — prefixed, are to be subtracted from the old style, to reduce it to the new; and those having the sign + prefixed, or after the year 200 of Christ, when there was no difference, are to be added to the old stile to reduce it to the new: All the years in this table are leap years in the old stile; but those only having the letter L prefixed, are leap years in the new stile.

TABLE LXXXIV.

Weights and Measures.

This table will be found necessary on many occasions; its use is obvious.

TABLE LXXXV.

Specific Gravities.

If any body be weighed in air, and then in water, and the weight in air being divided by the difference between the weights, the quotient will express the relative weight of the body, with respect to water, which is called its *specific gravity*. Spring water is taken as the standard, a cubic foot of which weighs $62\frac{1}{2}$ pounds avoirdupois, or 1000 ounces; and hence the numbers in this table express the number of avoirdupois ounces contained in a cubic foot of each body. Therefore, the weight of any body in the table, whose dimensions are given, may be found; or, if the weight is given, the corresponding number of cubic inches may be ascertained.

(H)

EXAMPLES.

I.

Required the weight of a block of marble, 8 feet long, 5 broad, and 3 feet thick?

The content of the stone, in cubic feet, is $= 8 \times 5 \times 3 = 120$ feet; which multiplied by 2703, the specific gravity of marble, the product 324360 is the weight in avoirdupois ounces, or 9 tons 1 cwt.

II.

What is the content of a block of granite, which weighs 5 tons, 1 cwt. 3 quarters?

The given weight, reduced to ounces, is 182336, which divided by 3500, the specific gravity of granite, the quotient $52\frac{1}{2}\frac{2}{5}$ solid feet, is the required content.

TABLE LXXXVI.

Containing the Circumference and Area of a Circle, to a given Diameter.

If the diameter of a circle be below 12, with one decimal annexed, the corresponding circumference and area, expressed in the same measure, are found immediately opposite thereto.

If the given diameter is any whole number between 12 and 120, let the right-hand figure be considered a decimal, and take out the corresponding circumference and area, in the first of which remove the decimal point one place to the right-hand; and in the second it is to be removed two places.

If the given diameter be a multiple of any in the table, take out the circumference and area answering to the part, the first of which being multiplied by the divisor, and the second by the square of the divisor, will give the circumference and area required.

The circumference answering to any diameter, may be found by means of this table, by collecting the terms corresponding to those that make up the diameter. Then, one-fourth of the circumference multiplied by the diameter will be the area.

EXAMPLES.

I.

Required the circumference and area of a circle, whose diameter is 78?

The given diameter, with one figure pointed off to the right is 7.8, opposite to which, we have the circumference 24.50442, and area 47.78362. Now, the decimal point being removed one place to the right hand, in the circumference, gives 245.0442, and two places in the area, gives 4778.362, the required circumference and area.

II.

Let the diameter of a circle be 256, required the corresponding circumference and area?

The given number exceeds 120; let it, therefore, be divided by some convenient number, as 4, then we have 64, one-tenth of which is 6.4.

Now, to diameter 6.4 the circumf. is	20.10619	and area	32.16991
Hence, to diameter 64 the circumf. is	201.0619	and area	3216.991
Multiply the circumference by	4	and area by	16
Circumference	804.2476,	Area	51471.856

III.

Required the circumference and superficial content of a circle, whose diameter is 437?

To diameter	-	430	-	the circumference is	-	1350.885
To diameter	-	7	-	the circumference is	-	21.991
<hr/>						
Hence, to diameter	-	437	-	the circumference is	-	1372.876
One-fourth of which is	-	-	-	-	-	343.219
Diameter	-	-	-	-	-	437
<hr/>						
						2402533
						1029657
						1372876
<hr/>						
Superficial content	-	-	-	-	-	149986.703

TABLE LXXXVII.

Containing the Diameter and Area of a Circle, whose Circumference is given.

The same rules answer for this, as for the preceding table, and therefore, scarcely requires any farther illustration.

TABLE LXXXVIII.

To reduce the Diameters of Casks of the different Varieties, to a Mean Diameter.

The forms of casks, in consequence of the various degrees of curvature of the staves, are very different; and, therefore, for the more ready ascertaining their contents as nearly, and with as little trouble, as possible, they are generally distinguished into four forms or varieties; to one of which, any cask to be measured, is to be referred.

If the staves of the cask be much curved, it is considered to be the middle frustum of a spheroid, and contains more than any other cask, whose length, bung and head diameters are the same.

If the staves are straight between the bung and head of the cask, it is considered to be composed of the lower frustums of two equal cones; and contains less than any other cask, whose length, and bung, and head diameters are the same.

Between these, two other varieties are introduced. That nearest to the spheroid is taken to be the middle frustum of a parabolic spindle, and the other is considered to be the lower frustums of two equal parabolic conoids.

When the variety to which the cask belongs is ascertained, the bung and head diameters are to be reduced to a mean diameter, and hence the contents of the cask may be found as follows:

Find the difference between the bung and head diameters; then, in the table, and variety to which the cask belongs, opposite to the inches in the side column, and under the tenths of an inch, in the difference, at the top, is a number; which added to the head diameter, the sum is the mean diameter.

Now, to twice the logarithm of the mean diameter, add the logarithm of the length of the cask in inches; and to the sum add the constant logarithm 7.44491, if the content is wanted in ale gallons; or 7.53165, if in wine gallons; the sum, rejecting 10 in the index, will be the content of the cask.

EXAMPLE.

Let the length of a cask of the first variety be 42 inches, bung diameter 31.0 inches, and head diameter 24.7. Required the content of the cask in ale and wine gallons?

Bung diameter	-	-	-	-	-	31.0
Head diameter	-	-	-	-	-	24.7
Difference	-	-	-	-	-	6.3

Now, opposite to 6, and under .3, in the table of the first variety, is 4.06, which added to the head diameter, the sum 28.76 is the mean diameter. Then,

Mean diameter 28.76	log.	1.45879	$\times 2 =$	2.91758		
Length	-	42.	log.	-	-	1.62325
Sum	-	-	-	-	4.54083	4.54083
Constant log. for ale gallons	-	-	-	-	7.44491	7.53165
Content in ale gallons	-	96.77	-	1.98574	Wine gal. 118.16	2.07243

TABLE LXXXIX.

Remarkable Æras and Events.

This table contains some remarkable epochs and events, reduced to the Julian period, the common received opinion of the creation of the world, and to that of the birth of Christ. The first of these was invented by J. Scaliger, and is the product of the cycles of the sun, moon, and indiction; that is, of 28.19 and 15, = 7980 years. Its commencement is placed prior to the creation of the world, and, therefore, includes all the other æras and events hitherto. When this period is completed, which will be in the year of Christ 3267 = 7980 — 4713, the second Julian period will begin.

By means of this table, the year of any other æra, &c. may be easily found, as follows:

EXAMPLES.

I.

Required the year of the æra of Nabonassar, answering to the year of Christ 1804?

Given year of Christian æra	-	1804,	or of the Julian period	6517
Æra of Nabonassar before Christ	-	746,	or of the Julian period	3967
Year of the æra of Nabonassar	-	2550	-	2550

II.

Required the year of the Hegira corresponding to the year 1804 of the Christian æra?

Given year of the Christian æra	-	-	-	1804
Æra of the Hegira	-	-	-	662
Year of the Hegira	-	-	-	1142

Since the Julian period is the product of the cycles of the sun, moon, and indiction; if, therefore, the years of these cycles answering to any year be given, the corresponding year of the Julian period may be found as follows:

Multiply the constant number 4845 by the given year of the cycle of the sun, 4200 by that of the cycle of the moon, and 6916 by the year of the cycle of the indiction, and the sum of these three products being divided by 7980, the remainder will be the year of the Julian period.

EXAMPLE.

Let the solar cycle be 21, lunar cycle 19, and indiction 7: required the corresponding year of the Julian period?

Constant number for sun	= 4845 × 21 =	101745
for moon	= 4200 × 19 =	79800
for indiction	= 6916 × 7 =	48412
		<hr/>
		7980)229957(28
		15960
		<hr/>
		70357
		63840
		<hr/>

Corresponding year of the Julian period 5517, to which answers
the year 1804 of the Christian era.

TABLE XC.

Logistic Logarithms.

A table of Logistic logarithms was first given by Mr. Jeremiah Shakerly, in his *Tabula Britannica*; and since Mr. Thomas Street has given another table of Logistic logarithms, in his *Astronomia Carolina*, of a different and more commodious form. These logarithms greatly facilitate those calculations where sexagesimals are concerned; which is almost always the case in taking, from astronomical tables, the equation answering to a given argument which differs by 60 minutes or seconds.

In using this table, if the first term of the analogy be 60, the sum of the logistic logarithm of the other two terms will be the logistic logarithm of the answer. And if the second or third terms be 60, the logistic logarithm of the other term subtracted from the logistic logarithm of the first, the remainder will be the logistic logarithm of the answer.

EXAMPLES.

I.

Required the equation of the orbit of Jupiter, by M. de Lambré's tables, the mean anomaly being $5^{\circ} 10' 51'' 25''$?

Tabular difference	-	5' 43"	-	Logistic log.	1.0210
Excess above tab. anom.		51 25	-	Logistic log.	0.0670
					<hr/>
Proportional part	-	4 54	-		1.0880
Equation to $5^{\circ} 10'$	-	1 59 47			<hr/>
Equation to $5^{\circ} 10' 51'' 25''$		1 54 53			

II.

Required the reduction, from the Cambridge tables, answering to a distance of 51° , the moon's altitude being 33° , and that of the star $12^\circ 38'$?

To dist. 51° , alt. $\downarrow 33^\circ$, and alt. $\ast 12^\circ$, red. = $11' 39''$		
	13	10 12
Difference	-	1 21
Excess of alt. of star above 12°	-	38 0
		logistic log. 1.6478
		logistic log. 0.1984
Proportional part	-	0 51
Reduction to alt 12° , &c.	-	11 33
		1.8462
Required reduction	-	10 42

III.

Required the altitude and longitude of the nonagesimal for Greenwich, by Dr. Maskelyne's tables; the right ascension of the meridian being $77^\circ 28' 42''$?

Alt. non. to $77^\circ = 61^\circ 49' 0''$			Long non. to $77 = 2s. 20^\circ 48' 20''$		
	78	61 52 40		78	2 21 30 40
Difference	-	3. 40	logis. l. 1.2139	Difference	42 20
Excess	-	28 42	logis. l. 3203	Excess	28 42
					l. log. 1498
					l. log. 3203
Prop. part	-	1 45	L5342	Prop. part	20 20
Alt. to 77	61 49 0		Long. non. to 77	2 20 48 20	4701
Altitude	61 50 45		Longitude	2 21 8 40	

Since logistic logarithms are analogous to proportional logarithms, those who wish more information, are referred to the second volume of the Author's Treatise on the Longitude.

TABLE XCI.

For the Construction of Water Mills.

This table was given by Mr. Ferguson, in his *Lectures on Select Subjects*, for which he gives the following directions.

"The water wheel must not be too large, for if it be, its motion will be too slow; nor too little, for then it will want power: and for a mill to be in perfection, the floats of the wheel ought to move with a third part of the velocity of the water, and the stone to turn round once in a second of time.

"In order to construct a mill in this perfect manner, observe the following rules."

I.

Measure the perpendicular height of the fall of water, in feet, above that part of the wheel on which the water begins to act; and call that the height of the fall.

II.

Multiply this constant number 64.2882 by the height of the fall, in feet, and the square-root of the product shall be the velocity of the water at the bottom of the fall, or the number of feet that the water there moves *per* second.

III.

Divide the velocity of the water by 3, and the quotient shall be the velocity of the float boards of the wheel; or the number of feet they must each go through in a second, when the water acts upon them so as to have the greatest power to turn the mill.

IV.

Divide the circumference of the wheel, in feet, by the velocity of its floats, in feet, *per* second, and the quotient shall be the number of seconds in which the wheel turns round.

V.

By this last number of seconds divide 60, and the quotient shall be the number of the turns of the wheel in a minute.

VI.

Divide 60, (the number of revolutions the mill-stone ought to have in a minute), by the number of turns of the wheel in a minute, and the quotient shall be the number of turns the mill-stone ought to have for one turn of the wheel.

VII.

Then, as the number of turns of the wheel in a minute, is to the number of turns of the mill-stone in a minute; so must the staves in the trundle, be to the number of cogs in the wheel, in the nearest whole numbers that can be found.

By these rules the following table is calculated, the diameter of the water-wheel being supposed to be 18 feet, which it is apprehended may be a good size in general.

To construct a mill by this table, find the height of the fall of water in the first column, and opposite to that height, in the sixth column is the number of cogs in the wheel; and in the seventh, the staves in the trundle, for causing the mill-stone to make about 60 revolutions in a minute, as near as possible, when the wheel goes with a third part of the velocity of the water. And it appears by the last column, that the number of cogs in the wheel, and staves in the trundle, are so near the truth for the required purpose, that the least number of revolutions of the mill-stone in a minute is between 59 and 60, and the greatest number never amounts to 61.

Such a mill as this, with a fall of water about $7\frac{1}{2}$ feet, will require about 32 hogsheads every minute to turn the wheel with a third part of the velocity with which the water falls; and to overcome the resistance arising from the friction of the geers and attrition of the stones in grinding the corn.

TABLE XCII.

For the Construction of Pumps.

This table was calculated by Mr. Booth, in which Mr. Ferguson made a few alterations, and extended it from 80 to 100 feet. In this calculation, Mr. Booth supposed the handle of the pump to be a lever encreasing the power five times; and had often found that a man can work a pump four inches diameter, and 30 feet high, and discharge $27\frac{1}{2}$ gallons of water, English wine measure, in a minute. Now, if it be required to find the diameter of a pump, that shall raise water, with the same ease, from any other height above the surface of the *well*, find that height in the first column, and opposite thereto in the second, is the diameter or width of the pump, and in the third column is the quantity of water which a man of ordinary strength can discharge in a minute.

The wideness or narrowness of the pump, in any other part besides that in which the piston works, does not make the pump more or less difficult to work, except what difference may arise from the friction of water in the bore; which is always greater in a narrow bore than in a wide one, because of the greater velocity of the water.

TABLE XCIII.

This table, which was constructed by that celebrated mathematician, Mr. William Emerson, contains the length of a pendulum vibrating seconds at every fifth degree of latitude, together with the length of a degree of latitude, in English miles. For an account of the pendulum, its various properties, &c. the reader may consult that article, by the Author of this, in the *Encyclopædia Britannica*.

TABLE I.
The Latitudes and Longitudes of Places.

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>HighW</i>
Aa River - - -	Europe	France	Eng. Chan.	50° 59' N	2° 17' E	11 ² 45'
Aalborg - - -	Europe	Denmark	Baltic Sea	56 50 N	9 46 E	
Abbeville - - -	Europe	France	Eng. Chan.	50 7 N	1 49 E	10 30
St. Abb's Head - -	Europe	Scotland	Ger. Ocean	55 55 N	2 10 W	2 30
Aberdeen - - -	Europe	Scotland	Ger. Ocean	57 9 N	2 8 W	0 45
Abo - - -	Europe	Finland	Baltic Sea	60 27 N	22 15 E	
Abrevrack or Aubrevrac	Europe	France	Eng. Chan.	48 32 N	4 20 W	4 30
Achen - - -	Asia	I. Sumatra	Ind. Ocean	5 22 N	95 34 E	
Achill Head - - -	Europe	I. Achill	Atl. Ocean	53 51 N	10 45 W	7 0
Adventure Bay - -	Asia	N. Holland	Pac. Ocean	43 23 S	147 80 E	4 36
Adventure Island -	Asia	Soc. Isles	Pacif. Ocean	17 5 S	144 18 W	
Agde - - -	Europe	France	Medit. Sea	43 19 N	3 28 E	
St. Agnes' lights -	Europe	Scil. Islands	Entr. Chan.	49 54 N	6 19 W	3 45
Agra - - -	Asia	India	Mogul Emp.	26 43 N	76 44 E	
Air - - -	Europe	Scotland	Atl. Ocean	54 25 N	4 26 W	10 80
Aisla, rock at entr. Clyde	Europe	Scotland	Atl. Ocean	55 15 N	5 5 W	11 0
Cape Ajuga - - -	Amer.	Peru	Pacif. Ocean	6 38 S	80 55 W	
St. Albans' Head -	Europe	England	Eng. Chan.	50 35 N	2 5 W	8 30
Albany River - - -	Amer.	N. So. Wales	Hud. Bay	52 35 N	85 23 W	
I. Alboran - - -	Africa	Algiers	Medit. Sea	36 0 N	2 32 W	
Aldborough - - -	Europe	England	Ger. Ocean	52 17 N	1 40 E	9 40
Alderney - - -	Europe	England	Eng. Chan.	49 48 N	2 15 W	0 0
Aleppo - - -	Asia	Syria	Medit. Sea	35 45 N	37 20 E	
Alexandretta - - -	Asia	Syria	Medit. Sea	36 35 N	36 14 E	
Alexandria - - -	Africa	Egypt	Medit. Sea	31 13 N	29 55 E	
I. Algeranca - - -	Africa	Canaries	Atl. Ocean	29 23 N	15 58 W	
Algiers - - -	Africa	Algiers	Medit. Sea	36 49 N	2 13 E	
Alicant - - -	Europe	Spain	Medit. Sea	38 21 N	0 30 W	
All Saints Bay - -	Amer.	Brazil	Atl. Ocean	13 5 S	38 50 W	
Amazons River, Mouths	Amer.	Terra Firma	Atl. Ocean	0 30 S	47 40 W 49 25 W	6 0 6 0
Ambletuse - - -	Europe	France	Eng. Chan.	50 48 N	1 37 E	11 0
I. Amboyna - - -	Asia	Molucca Is.	Ind. Ocean	4 25 N	127 20 E	
I. d'Ambre, N. point	Africa	Is. of France	Ind. Ocean	20 5 S	57 37 E	
I. Ambrym - - -	Asia	N. Hebrides	Pacif. Ocean	16 10 S	168 7 E	
I. Ameyland - - -	Europe	Unit. Prov.	Ger. Ocean	53 30 N	6 15 E	7 40
Amsterdam - - -	Europe	Unit. Prov.	Ger. Ocean	52 22 N	4 51 E	3 0
I. Amsterdam - -	Asia	Friendly Is.	Pacif. Ocean	21 9 S	174 46 W	8 30
Anchor Point - -	Amer.	Newfoundl.	Atl. Ocean	51 15 N	56 47 W	9 0
Ancona - - -	Europe	Italy	Medit. Sea	43 38 N	13 30 E	
St. Andrews - - -	Europe	Scotland	Ger. Ocean	56 21 N	2 49 W	2 0
Angra - - -	Europe	Tercera	Atl. Ocean	38 39 N	27 12 W	2 20
Angra Bay - - -	Africa	Negroland	Atl. Ocean	20 55 N	17 10 W	3 40
Anholt, lights - -	Europe	Denmark	Sound	56 54 N	11 40 E	0 0
Cape Ann, lights -	Amer.	New Engl.	Atl. Ocean	42 51 N	71 9 W	10 0
Annamocka - - -	Asia	Friendly Is.	Pacif. Ocean	20 16 S	174 30 W	6 0
Annapolis Royal -	Amer.	Nova Scotia	B. Fundy	44 52 N	64 5 W	10 0
Antibes - - -	Europe	France	Medit. Sea	43 35 N	7 7 E	
Antigua, St. John's	Amer.	Carib. Isles	Atl. Ocean	17 4 N	62 9 W	
Antwerp - - -	Europe	Flanders	R. Scheld	51 13 N	4 23 E	6 0
I. Apæ - - -	Asia	N. Hebrides	Pacif. Ocean	16 46 S	168 27 E	
Aquapulco - - -	Amer.	Mexico	Pacif. Ocean	17 10 N	101 45 W	
Aracta - - -	Asia	Turkey	Medit. Sea	36 1 N	38 50 E	
Arbroath - - -	Europe	Scotland	Ger. Ocean	56 34 N	2 37 W	1 40
Archangel - - -	Europe	Russia	White Sea	64 34 N	33 58 E	6 0
Arica - - -	Amer.	Peru	Pacif. Ocean	18 27 S	71 11 W	
Arklow Head - - -	Europe	Ireland	Atl. Ocean	52 42 N	6 5 W	9 30
Arles - - -	Europe	France	Medit. Sea	43 40 N	4 37 E	
I. Arran - - -	Europe	Scotland	Atl. Ocean	55 39 N	5 13 W	11 0
I. Arrah - - -	Europe	Ireland	Atl. Ocean	54 48 N	9 2 W	11 0

TABLE I.
The Latitudes and Longitudes of Places.

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High W. at.</i>
L. Ascension - -	Africa	Congo	Ethio. Ocean	7 56 S	14 21 W	
Ashley River - -	Amer.	Carolina	Atl. Ocean	33 22 N	79 55 E	0 45
Assene River - -	Africa	Guinea	Atl. Ocean	5 30 N	2 25 W	
I. Astores, - -	Africa	Madagascar	Ind. Ocean	10 22 S	53 30 E	
Athens - -	Europe	Turkey	Archipelag.	38 5 N	23 52 E	
Atkin's Key - -	Amer.	Bahama Is.	Atl. Ocean	22° 7' N	73° 51' W	
Atwood's Keys - -	Amer.	Bahama Is.	Atl. Ocean	21 23 N	72 45 W	
St. Augustine River - -	Amer.	Labradore	Gulf of St. Law.	51 23 N	57 25 W	
St. Augustine - -	Africa	Madagascar	Ind. Ocean	23 35 S	43 8 E	
St. Augustine - -	Amer.	Florida	Atl. Ocean	30 10 N	81 34 W	7 30
Cape St. Augustine - -	Amer.	Brazil	Atl. Ocean	8 48 S	35 5 W	
Cape St. Augustine - -	Asia	Mindanao	Pacif. Ocean	6 40 N	126 20 E	
Aurora Island - -	Asia	N. Hebrides	Pacif. Ocean	15 8 S	168 17 E	
Cape Ava - -	Asia	Japan	Pacif. Ocean	34 45 N	140 55 E	
I. Aves, Sotovento - -	Amer.	Terra Firma	Atl. Ocean	11 30 N	66 48 W	
Avignon - -	Europe	France	Mediterr.	43 57 N	4 48 E	
Avranches - -	Europe	France	Eng. Chan.	48 41 N	1 22 W	6 0
Aydhah - -	Africa	Egypt	Red Sea	31 53 N	36 21 E	
Aylah - -	Asia	Arabia	Red Sea	29 8 N	35 36 E	
B.						
Straits of Babelmandel - -	Africa	Abyssinia	Red Sea	12 50 N	43 45 E	0 0
Baccareau Pas-age - -	Amer.	Sable Is.	Atl. Ocean	43 31 N	65 41 W	
Balade Harbour - -	Asia	N. Caledonia	Pacif. Ocean	20 15 S	164 40 E	6 0
Balalore - -	Asia	India	B. Bengal	21 20 N	86 0 E	10 0
Ballabea Island - -	Asia	N. Caledonia	Pacif. Ocean	20 7 S	164 22 E	6 0
Baltimore - -	Europe	Ireland	Atl. Ocean	51 16 N	9 30 W	4 30
Bambrorough - -	Europe	England	Germ. Ocean	55 37 N	1 47 W	3 30
Banea Isl. {S. end } - -	Asia	Sunda Isles	Ind. Ocean	3 15 S	107 10 E	
Banff {N.W. end } - -	Europe	Scotland	Germ. Ocean	1 50 S	105 30 E	
Banguay Peek - -	Asia	Malacca	Ind. Ocean	57 41 N	2 31 W	0 0
Cape Barbas - -	Africa	Sanhaga	Atl. Ocean	22 15 N	16 40 W	
Barbuda Island - -	Amer.	Caribbe Isles	Atl. Ocean	17 50 N	61 50 W	
Barcelona - -	Europe	Spain	Medit. Sea	41 23 N	2 11 E	
Barfleur Light-house - -	Europe	France	Eng. Chan.	49 42 N	1 17 W	10 30
Barnevelt's Islands - -	Amer.	Terra del Fue.	S. Ocean	55 49 S	66 58 W	
St. Bartholomew Island - -	Asia	N. Hebrides	Pacif. Ocean	15 42 S	167 17 E	
Ile de Bas - -	Europe	France	Eng. Chan.	48 45 N	3 55 W	3 45
Bass, rock - -	Europe	Scotland	Germ. Sea	56 5 N	2 41 W	2 15
Basse-Terre - -	Amer.	Guadaloupe	Atl. Ocean	15 59 N	61 54 W	
Bastia - -	Europe	Corsica	Medit. Sea	42 42 N	9 25 E	
Batavia - -	Asia	Java Is.	Ind. Ocean	6 11 S	106 52 E	
Bayeux - -	Europe	France	Eng. Chan.	49 17 N	0 43 W	8 15
Bayonne - -	Europe	France	B. of Biscay	43 29 N	1 30 W	3 30
Beachey Head - -	Europe	England	Eng. Chan.	50 44 N	0 30 E	10 0
Bear Bay - -	Europe	Greenland	N. Ocean	79 10 N	24 10 E	
Bear Island - -	Amer.	Labradore	Hudson's Bay	54 34 N	79 56 W	0 0
St. Bees Head - -	Europe	England	Irish Sea	54 51 N	3 48 W	10 45
Belfast - -	Europe	Ireland	Irish Sea	54 49 N	5 57 W	10 0
Bell Isle - -	Europe	France	B. of Biscay	47 17 N	3 6 W	2 30
Bell Rock - -	Europe	Scotland	Germ. Sea	56 27 N	2 26 W	3 0
Bembridge Point - -	Europe	Isle of Wight	Eng. Chan.	50 40 N	1 5 W	10 15
Bencoolen - -	Asia	Sumatra	Ind. Ocean	3 49 S	102 9 E	
Bergen - -	Europe	Norway	Atl. Ocean	60 24 N	5 20 E	
Bermudas Island - -	Amer.	Bahama Isles	Atl. Ocean	32 9 N	64 54 W	5 30
Point of rocks - -	Europe	Brittain	Germ. Sea	55 47 N	2 5 W	2 30
Berwick - -				56 4 N	2 45 W	2 0
North Berwick - -	Europe	Scotland	Germ. Sea	43 20 N	3 18 E	
Beziers - -	Europe	France	Medit. Sea	43 20 N	3 18 E	
I. du Bic - -	Amer.	Acadia	Riv. St. Law.	48 30 N	68 41 W	2 0
Bilboa - -	Europe	Spain	B. of Biscay	43 26 N	3 23 W	3 15

TABLE I.
The Latitudes and Longitudes of Places.

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<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>Hight Wat.</i>
Blackeney River -	Europe	England	Germ. Sea	53° 20' N	0° 50' E	6 ^h 0'
Black Point -	Europe	Greenland	N. Ocean	78 13 N	10 33 E	
Blanchart Race -	Europe	France	Eng. Chan.	49 42 N	2 13 W	9 0
Cape Blanco -	Africa	Negroland	Atl. Ocean	20 55 N	17 16 W	9 45
Cape Blanco -	Amer.	Patagonia	Atl. Ocean	47 20 S.	64 42 W	
Blavet, or Port Louis -	Europe	France	B. of Biscay	47 43 N	3 22 W	3 0
Cape Bojadore -	Africa	Negroland	Atl. Ocean	26 12 N	14 27 W	
Bolabola -	Asia	Society Isles	Pacif. Ocean	16 32 S	151 52 W	
Bolschereskoi -	Asia	Siberia	Pacif. Ocean	52 54 N	156 37 E	
Bombay -	Asia	India	Ind. Ocean	18 57 N	72 38 E	
Bonavista Island -	Africa	C. Verd Isles	Atl. Ocean	16 6 N	22 47 W	
Boston light-house -	Amer.	New Engl.	Atl. Ocean	42 25 N	70 37 W	10 0
Botany Bay -	Asia	N. Holland	Pacif. Ocean	34 0 S	151 23 E	8 0
Botany Island -	Asia	N. Caledonia	Pacif. Ocean	22 27 S	167 17 E	10 30
Boulogne -	Europe	France	Eng. Chan.	50 43 N	1 37 E	10 30
Bourbon Island -	Africa	Madagascar	Ind. Ocean	20 52 S	55 30 E	
Bordeaux -	Europe	France	B. of Biscay	44 50 N	0 35 W	3 0
Brava Island -	Africa	Cape Verd I.	Atl. Ocean	14 50 N	24 49 W	
Bremen -	Europe	Germany	R. Weser	53 5 N	8 49 E	6 0
Bressay Sound -	Europe	Shetland I.	Atl. Ocean	60 11 N	0 49 W	10 0
Brest -	Europe	France	B. of Biscay	48 23 N	4 81 W	3 40
Cape Brett -	Asia	N. Zealand	Pacif. Ocean	35 9 S	174 12 W	
St. Bride's Bay -	Europe	Wales	St. Geo. Chan.	51 48 N	5 23 W	6 0
Bridge Town -	Amer.	Barbadoes	Atl. Ocean	13 5 N	59 41 W	
Brington Bay -	Europe	England	Germ. Sea	54 7 N	0 1 W	3 50
Bridport -	Europe	England	Eng. Chan.	50 40 N	2 55 W	6 45
St. Brieux -	Europe	France	Eng. Chan.	48 31 N	2 43 W	5 50
Brighthelmstone -	Europe	England	Eng. Chan.	50 50 N	0 5 W	9 50
Brill -	Europe	Unit. Prov.	Germ. Ocean	51 53 N	4 14 E	1 40
Bristol -	Europe	England	St. Geo. Chan.	51 28 N	2 35 W	6 40
Cape Bristol -	Amer.	Sandwich I.	Atl. Ocean	59 2 S	26 51 W	
Brouage -	Europe	France	B. of Biscay	45 52 N	1 5 W	3 50
Buchan-ness -	Europe	Scotland	Germ. Sea	57 30 N	1 46 W	0 0
Buenos Ayres -	Amer.	Brazil	Atl. Ocean	34 35 S	58 31 W	
Cape Buller -	Amer.	S. Georgia	Atl. Ocean	53 58 S	37 40 W	
Burgeo Isles -	Amer.	Newfoundl.	Atl. Ocean	47 36 N	57 36 W	
Burgh Head -	Europe	Scotland	Germ. Ocean	57 43 N	3 30 W	
Burlings -	Europe	Portugal	Atl. Ocean	39 20 N	9 37 W	5 0
Bustard Bay -	Asia	N. Holland	Pacif. Ocean	24 4 S	151 42 E	8 0
Button-ness -	Europe	Scotland	Germ. Sea	56 28 N	2 45 W	2 0
Button's Isles -	Amer.	New Britain	Hudson's St.	60 41 N	65 21 W	6 50
C. C.						
Port Cabello -	Amer.	Terra Firma	Atl. Ocean	10 31 N	67 32 W	
Cadiz -	Europe	Spain	Atl. Ocean	36 31 N	6 12 W	4 30
Caen -	Europe	France	Eng. Chan.	49 11 N	0 22 W	9 0
Caernarvon -	Europe	Wales	St. Geo. Chan.	53 6 N	4 30 W	8 30
Cairo -	Africa	Egypt	Mediterr. Sea	30 3 N	31 21 E	
Caithness Point -	Europe	Scotland	Germ. Sea	58 46 N	3 22 W	9 0
Calais -	Europe	France	Eng. Chan.	50 57 N	1 51 E	11 48
Calcutta -	Asia	India	Ind. Ocean	22 53 N	88 29 E	
Callao -	Amer.	Peru	Pacif. Ocean	12 2 S	76 58 W	
Calmar -	Europe	Sweden	Baltic Sea	56 40 N	16 22 E	
Canary Is. N.E. point -	Africa	Canaries	Atl. Ocean	28 18 N	15 39 W	3 0
Candia Island -	Europe	Turkey	Mediterr. Sea	35 19 N	25 18 E	
Candlemas Isles -	Amer.	Sandwich I.	Atl. Ocean	57 10 S	27 19 W	
Cape Canso -	Amer.	Nova Scotia	Atl. Ocean	45 16 N	60 55 W	8 30
Port Canso -	Amer.	Nova Scotia	Atl. Ocean	45 20 N	60 55 W	8 30
Cape Cantin -	Africa	Barbary	Atl. Ocean	32 44 N	9 10 W	0 0
Canton -	Asia	China	Pacif. Ocean	23 8 N	113 2 E	
Mull of Cantyre -	Europe	Scotland	Atl. Ocean	55 17 N	5 41 W	10 30
Cape Capricorn -	Asia	N. Holland	Pacif. Ocean	23 28 S	151 2 E	8 0

TABLE I.
The Latitudes and Longitudes of Places.

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Wat.</i>
Charlesroon - - -	Europe	Sweden	Baltic Sea	56° 20' N	15° 26' E	
Carthage - - -	Europe	Spain	Medit. Sea	37 37 N	1 8 W	
Carthage - - -	Amer.	Terra Firma	Carib. Sea	10 27 N	75 27 W	
Casan - - -	Asia	Siberia	Pacif. Ocean	55 44 N	49 8 E	
Caskets - - -	Europe	Guernsey	Eng. Chan.	49 50 N	2 30 W	8 15
Cape Cassipour - -	Amer.	Guiana	Atl. Ocean	4 3 N	51 13 W	5 0
Castres - - -	Europe	France	Medit. Sea	43 36 N	2 13 E	
St. Catherine's Isle -	Amer.	Brazil	Atl. Ocean	27 35 S	49 17 W	
Cayenne - - -	Amer.	L. Cayenne	Atl. Ocean	4 56 N	52 15 W	5 0
Cette, light - - -	Europe	France	Medit. Sea	43 24 N	3 41 E	
Charlotte Bay - - -	Amer.	Nova Scotia	Atl. Ocean	44 34 N	68 55 W	8 0
Cape Charlotte - - -	Amer.	S. Georgia	Atl. Ocean	54 32 S	36 11 W	
Charlotte's Foreland -	Asia	N. Caledonia	Pacif. Ocean	22 15 S	167 13 E	
Charlotte Harbour -	Amer.	Florida	Gulf, of Mex.	26 41 N	82 37 W	8 0
Charlotte's Sound - -	Asia	N. Zealand	Pacif. Ocean	41 6 S	174 14 E	9 0
Charlton Island - - -	Amer.	New Wales	Hud. Bay	52 3 N	79 5 W	
Chatham Island - - -	Asia	N. Zealand	Pacif. Ocean	43 49 S	176 35 E	
Cape Cheators - - -	Asia	China	Yellow Sea	37 31 N	121 33 E	
Cheignecto - - -	Amer.	Nova Scotia	B. Fundy	46 15 N	63 16 W	0 45
Cherbourg - - -	Europe	France	Eng. Chan.	49 38 N	1 38 W	7 45
Christiana - - -	Europe	Norway	Sound	59 55 N	10 48 E	
Christiansound - - -	Europe	Norway	N. Ocean	63 7 N	7 42 E	
Christmas Harbour - -	Asia	Kerguelen's L.	Atl. Ocean	48 41 S	59 4 E	10 0
Christmas Sound - - -	Amer.	Terra del Fue.	Pacif. Ocean	55 22 S	70 3 W	2 30
St. Christopher's Island	Amer.	Carib. Isles	Atl. Ocean	17 15 N	62 43 W	
Churchill River - - -	Amer.	New Wales	Hudson's B.	58 47 N	94 7 W	7 20
Elvita Vecchia - - -	Europe	Italy	Medit. Sea	42 5 N	11 44 E	
Clarence Island - - -	Asia	China	Yellow Sea	30 45 N	122 50 E	
Cape Clear - - -	Europe	Ireland	Atl. Ocean	51 18 N	11 15 W	4 30
Clerke's Isles - - -	Amer.	S. Georgia	Atl. Ocean	55 5 S	34 42 W	
Cloch, light-house - -	Europe	Scotland	Atl. Ocean	55 56 N	4 52 W	11 0
Cloven Cliff - - -	Europe	Greenland	N. Ocean	79 53 N	9 59 E	
Clythness - - -	Europe	Scotland	Germ. Sea	58 20 N	3 7 W	9 15
Cape Cod, light - - -	Amer.	United States	Atl. Ocean	42 5 N	70 19 W	
Cape Colenet - - -	Asia	N. Caledonia	Pacif. Ocean	20 30 S	164 56 E	
Cape Comorin - - -	Asia	India	Ind. Ocean	7 56 N	78 5 E	
Concale Bay - - -	Europe	France	Eng. Chan.	48 44 N	1 44 W	7 0
Concarneau - - -	Europe	France	B. of Biscay	47 54 N	3 55 W	3 0
Conception - - -	Amer.	Chili	Pacif. Ocean	36 43 S	72 40 W	
Conquet - - -	Europe	France	Atl. Ocean	48 32 N	4 50 W	2 15
Constantinople - - -	Europe	Turkey	Archipelago	41 1 N	28 54 E	
Cooper's Isle - - -	Amer.	S. Georgia	Atl. Ocean	54 57 S	36 4 W	
Copenhagen - - -	Europe	Denmark	Baltic Sea	55 41 N	12 35 E	
Copenhaga - - -	Europe	Orkney Isles	N. Ocean	58 53 N	2 45 W	11 30
Coquet Island - - -	Europe	England	Germ. Sea	55 20 N	1 30 W	3 0
Coquimbo - - -	Amer.	Chili	Pacif. Ocean	29 54 S	71 16 W	
Cordovan, light-house	Europe	France	B. of Biscay	45 35 N	1 11 W	4 30
Cork - - -	Europe	Ireland	Sp. Geo. Chan.	51 54 N	8 26 W	6 30
Cape Coronation - - -	Asia	N. Caledonia	Pacif. Ocean	22 5 S	167 8 E	
Cape Corse - - -	Africa	Guinea	Atl. Ocean	5 12 N	0 28 W	3 30
Corvo - - -	Europe	Azores	Atl. Ocean	39 42 N	31 6 W	
Coutances - - -	Europe	France	Eng. Chan.	49 3 N	1 27 W	6 0
Cowes - - -	Europe	Is. of Wight	Eng. Chan.	50 46 N	1 20 W	10 30
Cowsey Point - - -	Europe	Scotland	Germ. Sea	57 45 N	3 17 W	0 0
Croisan Harbour - - -	Europe	Scotland	Atl. Ocean	56 5 N	5 29 W	
Croisic - - -	Europe	France	B. of Biscay	47 18 N	2 32 W	3 45
Cromarty - - -	Europe	Scotland	Atl. Ocean	57 43 N	4 9 W	11 40
Cromer - - -	Europe	England	Germ. Sea	53 5 N	0 51 E	7 0
St. Cruz Island - - -	Amer.	Antilles	Atl. Ocean	17 49 N	64 53 W	
Cullen - - -	Europe	Scotland	Germ. Sea	57 42 N	2 50 W	0 0

TABLE I.
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<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Wat.</i>
Cape Cumberland -	Asia	N. Hebrides	Pacif. Ocean	14° 39' S	166° 47' E	
Cumbray, light-house -	Europe	Scotland	Atl. Ocean	55 43 N	4 57 W	11 0
Cummin Island -	Asia	China	Yellow Sea	31 40' N	121 4 E	
D. -						
Dantzic -	Europe	Poland	Baltic Sea	54 22 N	18 34 E	
Dartmouth -	Europe	England	Eng. Chan.	50 21 N	3 42 W	6 30
Dassen Island -	Africa	Caffres	Atl. Ocean	33 25 S	18 2 E	
St. David's Head -	Europe	Wales	St. Geo. Chan.	51 55 N	5 27 W	6 0
Deadman's Point -	Europe	England	Eng. Chan.	50 13 N	4 53 W	5 10
St. Denis -	Africa	I. Bourbon	Ind. Ocean	20 52 S	55 30 E	
Cape Diego -	Amer.	Ter. del Fueg	S. Ocean	54 33 S	65 14 W	
Dieppe -	Europe	France	Eng. Chan.	49 55 N	1 4 E	10 30
Cape Diggs -	Amer.	Labrador	Hudson's Bay	62 41 N	78 51 W	0 0
Cape Diggs, or C. Dudley	Amer.	Greenland	Baffin's Bay	76 48 N	59 12 W	
Dingle Bay -	Europe	Ireland	Atl. Ocean	51 55 N	10 40 W	3 30
Cape Disappointment	Amer.	S. Georgia	Atl. Ocean	54 58 S	36 15 W	
Cape Disseada -	Amer.	Ter. del Fue.	S. Ocean	55 4 S	74 18 W	
Dol -	Europe	France	Eng. Chan.	48 33 N	1 46 W	6 0
Dominica Island -	Amer.	Windw. I.	Atl. Ocean	15 18 N	61 28 W	
St. Domingo -	Amer.	Hispaniola	Atl. Ocean	18 20 N	69 46 W	
Dort -	Europe	Unit. Prov.	Germ. Sea	51 47 N	4 35 E	3 0
Douglas -	Europe	I. of Man	Irish Sea	54 7 N	4 38 W	10 30
Dover -	Europe	England	Eng. Chan.	51 8 N	1 18 E	11 30
Drontheim -	Europe	Norway	N. Ocean	63 26 N	10 22 E	
Dublin -	Europe	Ireland	Irish Sea	53 21 N	6 6 W	9 15
Dunbar -	Europe	Scotland	Germ. Sea	56 1 N	2 33 W	2 30
Dunbarton -	Europe	Scotland	Atl. Ocean	55 57 N	4 31 W	11 15
Dunçansby Head -	Europe	Scotland	Germ. Sea	58 40 N	3 7 W	8 20
Dundee -	Europe	Scotland	Germ. Sea	56 28 N	2 58 W	2 10
Dungarvon -	Europe	Ireland	Atl. Ocean	52 0 N	7 50 W	4 30
Dunegeness -	Europe	England	Eng. Chan.	50 52 N	0 59 E	9 45
Dunkirk -	Europe	France	Eng. Chan.	51 2 N	2 22 E	11 48
Dunnose -	Europe	I. of Wight	Eng. Chan.	50 33 N	1 16 W	9 45
Dusky Bay	Asia	N. Zealand	Pacif. Ocean	45 47 S	166 18 E	10 57
E.						
Eaoowe Island -	Asia	Friendly Is.	Pacif. Ocean	21 24 S	174 30 W	
East Cape -	Asia	N. Zealand	Pacif. Ocean	37 42 S	178 30 W	
Easter Island -	Amer.	Chili	Pacif. Ocean	27 7 S	109 47 W	2 0
Eddystone -	Europe	England	Eng. Chan.	50 8 N	4 24 W	5 30
Edinburgh -	Europe	Scotland	Germ. Sea	55 58 N	3 12 W	2 20
Elly -	Europe	Scotland	Germ. Sea	56 12 N	2 52 W	2 0
Elsineur -	Europe	Denmark	Baltic Sea	56 2 N	12 37 E	
Embsden -	Europe	Germany	Germ. Sea	53 12 N	7 16 E	0 30
Enatum Island -	Asia	N. Hebrides	Pacif. Ocean	20 10 S	170 4 E	
Enchuyzen -	Europe	Unit. States	Germ. Sea	52 42 N	5 9 E	0 0
Endeavour River -	Asia	N. Holland	Pacif. Ocean	15 26 S	145 11 E	9 30
English Road -	Asia	Eaoowe	Pacif. Ocean	21 20 S	174 34 W	
Erramanga Island -	Asia	N. Hebrides	Pacif. Ocean	18 46 S	169 18 E	
Etaples -	Europe	France	Eng. Chan.	50 32 N	1 40 E	11 0
Evout's Isles -	Amer.	Terra del F.	S. Ocean	55 34 S	66 59 W	
Exeter -	Europe	England	Eng. Chan.	50 44 N	3 34 W	10 30
Eyemouth -	Europe	England	Germ. Sea	55 53 N	2 9 W	2 15
Exmouth Bar -	Europe	England	Eng. Chan.	50 37 N	3 27 W	6 20
F.						
Fair Island -	Europe	Orkney Is.	N. Ocean	59 30 N	1 46 W	10 0
Falmouth -	Europe	England	Eng. Chan.	50 8 N	5 2 W	5 30
False Bay -	Africa	Caffres	Ind. Ocean	34 10 S	18 33 E	
Cape False -	Africa	Caffres	Ind. Ocean	34 16 S	18 44 E	
False Point -	Asia	Bengal	Ind. Ocean	20 22 N	87 5 E	
Cape Farewell -	Amer.	Greenland	N. Ocean	59 38 N	42 42 W	
Cape Farewell -	Asia	N. Zealand	Pacif. Ocean	40 37 S	172 41 E	
Fayal (Town) -	Europe	Azores	Atl. Ocean	38 32 N	28 41 W	2 20

TABLE I.
The Latitudes and Longitudes of Places.

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Wat.</i>
Fern Island, light-house	Europe	England	Germ. Sea	55° 38' N	1° 44' W	3h 30'
Ferro Island, town	Africa	Canaries	Atl. Ocean	27 47 N	17 46 W	3 0
Ferrol	Europe	Spain	B. Biscay	43 29 N	8 15 W	3 0
Fidra	Europe	Scotland	Germ. Sea	56 5 N	2 51 W	2 10
Fife's-ness	Europe	Scotland	Germ. Sea	56 17 N	2 37 W	2 0
Cape Finisterre	Europe	Spain	Atl. Ocean	42 52 N	9 17 W	3 15
Flamborough Head	Europe	England	Germ. Ocean	54 11 N	0 19 E	3 40
Florence	Europe	Italy	Med. Sea	43 46 N	11 2 E	
Flores	Europe	Azores	Atl. Ocean	39 34 N	31 0 W	
Cape Florida	Amer.	Florida	Atl. Ocean	25 47 N	80 35 W	7 30
Flushing	Europe	Zealand	Germ. Sea	51 27 N	3 33 E	0 45
N. Foreland	Europe	England	Germ. Sea	51 25 N	1 28 E	10 20
S. Foreland	Europe	England	Eng. Chan.	51 10 N	1 23 E	10 20
Fortaventura, W. point	Africa	Canaries	Atl. Ocean	28 4 N	14 31 W	
Fortrose	Europe	Scotland	Germ. Sea	57 40 N	4 7 W	11 40
Foul-ness	Europe	England	Germ. Sea	52 57 N	0 53 E	6 45
Foul Point	Africa	Madagascar	Ind. Ocean	17 40 S	49 53 E	
Fowey	Europe	England	Eng. Chan.	50 20 N	4 35 W	5 40
Isle of France, S.W. point	Africa	Madagascar	Ind. Ocean	20 27 S	57 16 E	
Cape François	Amer.	Hispaniola	Atl. Ocean	19 46 N	72 18 W	
Old Cape François	Amer.	Hispaniola	Atl. Ocean	19 40 N	70 2 W	
Cape Frankelint	Europe	Langeland	Baltic Sea	55 10 N	10 56 E	
Cape Fréhel	Europe	France	Eng. Chan.	48 41 N	2 20 W	6 0
Frejus	Europe	France	Medit. Sea	43 26 N	6 44 E	
Friesland's Peak	Amer.	Sandw. Land	Atl. Ocean	59 2 S	26 55 W	
Fronsac Straits	Amer.	Nova Scotia	Atl. Ocean	45 37 N	61 19 W	8 30
Fuego Island	Africa	Cape Verd I.	Atl. Ocean	14 57 N	24 28 W	
Funchal	Africa	Madeira	Atl. Ocean	32 38 N	17 6 W	0 4
Furieux Island	Asia	Society Isles	Pacif. Ocean	17 11 S	143 7 W	
Furruenas, S. W. pt. Stadt. G.	Europe	Norway	N. Ocean	62 6 N	5 7 E	
Gabey	Asia	New Guinea	Pacif. Ocean	0 6 S	126 24 E	
Mull of Galloway	Europe	Scotland	Atl. Ocean	54 38 N	5 9 W	11 0
Galway	Europe	Ireland	Atl. Ocean	53 10 N	10 1 W	3 0
Garmouth	Europe	Scotland	Germ. Ocean	57 41 N	3 6 W	11 50
Genoa	Europe	Italy	Medit. Sea	44 25 N	8 86 E	
St. George's Island	Europe	Azores	Atl. Ocean	38 39 N	28 0 W	
St. George, town	Amer.	Bermudas	Atl. Ocean	92 22 N	64 33 W	5 30
Fort George	Europe	Scotland	Germ. Sea	57 38 N	4 5 W	11 40
Fort St. George	Asia	India	B. Bengal	13 5 N	80 29 E	
Cape St. George	Asia	N. Britain	Pacif. Ocean	4 53 S	153 9 E	
Cape George	Amer.	S. Georgia	Atl. Ocean	54 17 S	36 32 W	
Ghent	Europe	Flanders	Scheld	51 3 N	3 44 E	
Gibraltar	Europe	Spain	Medit. Sea	36 5 N	5 22 W	
Gilbert's Isle	Amer.	Terra del F.	S. Ocean	55 13 S	71 7 W	
Girdleness	Europe	Scotland	Germ. Sea	57 8 N	2 6 W	0 45
Glasgow	Europe	Scotland	R. Clyde	55 52 N	4 15 W	
Port Glasgow	Europe	Scotland	R. Clyde	55 56 N	4 38 W	11 30
Goa	Asia	India	Malabar	15 31 N	73 45 E	
Goat Island	Asia	China	Ind. Ocean	13 55 N	120 2 E	
Gomera Island	Africa	Canaries	Atl. Ocean	28 6 N	17 8 W	
Cape of Good Hope	Africa	Caffres	Ind. Ocean	34 29 S	18 23 E	3 0
Good Hope, town	Africa	Caffres	Ind. Ocean	33 56 S	18 23 E	2 30
Goree Island	Europe	United Prov.	Germ. Sea	51 44 N	4 20 E	1 50
Gorce Island	Africa	Negroland	Atl. Ocean	14 40 N	17 25 E	1 30
Gottenburgh	Europe	Sweden	Sound	57 42 N	11 39 E	
Cape Gower	Asia	China	Yellow Sea	36 52 N	122 36 E	
Gower's Island	Asia	N. Britain	Pacif. Ocean	7 56 S	158 56 E	
Granville	Europe	France	Eng. Chan.	48 50 N	1 37 W	7 0
Gratiosa	Europe	Azores	Atl. Ocean	39 2 N	27 58 W	
Gravelines	Europe	France	Eng. Chan.	50 59 N	2 7 E	11 45

TABLE I.
The Latitudes and Longitudes of Places.

7

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>HighWats.</i>
Gravesend - -	Europe	England	R. Thames	51° 28' N	0° 20' E	1° 30'
Greenwich - -	Europe	England	R. Thames	51° 29' N	0 0	2 40
Greenock - -	Europe	Scotland	R. Clyde	55° 57' N	4 43W	11 30
Greigness - -	Europe	Scotland	Germ. Sea	57° 7' N	2 6W	0 45
Guadaloupe - -	Amer.	Caribbee Is.	Atl. Ocean	15° 59' N	61 59W	
Guernsey - -	Europe	England	Eng. Chan.	49° 30' N	2 52W	1 30
Guiaquil - -	Amer.	Peru	Pacif. Ocean	2° 11' S	81 11W	
Gullen-ness - -	Europe	Scotland	Germ. Sea	56° 4' N	2 55W	2 0
H.						
Hacluyt's Headland - -	Europe	Greenland	N. Ocean	79° 47' N	9 11 E	1 30
Hague - -	Europe	Unit. Prov.	Germ. Sea	52° 4' N	4 17 E	8 15
Halifax - -	Amer.	Nova Scotia	Atl. Ocean	44° 46' N	63° 27W	7 30
Hamburgh - -	Europe	Germany	R. Elbe	53° 34' N	9 55 E	6 0
Hangcliff - -	Europe	Shetland	N. Ocean	60° 9' N	0 56W	9 30
Cape Hanglip - -	Africa	Caffres	Ind. Ocean	34° 16' S	18 44 E	
Harlem - -	Europe	Unit. Prov.	Germ. Sea	52° 22' N	4 36 E	9 0
Harland Point - -	Europe	England	Bristol Chan.	51° 6' N	4 40W	4 30
Hartlepool - -	Europe	England	Germ. Sea	54° 40' N	1 1W	3 0
Harwich - -	Europe	England	Germ. Sea	52° 11' N	1 13 E	11 15
Cape Matheras - -	Amer.	Carolina	Atl. Ocean	35° 12' N	76 5W	11 0
Laure de Grace - -	Europe	France	Eng. Chan.	49° 29' N	0 6 E	9 20
St. Helena, James town	Africa	Caffres	Atl. Ocean	15° 55' S	5 49W	2 15
Cape Henlopen - -	Amer.	Virginia	Atl. Ocean	38° 47' N	75 13W	
Cape Henry - -	Amer.	Virginia	Atl. Ocean	36° 57' N	76 19W	11 15
Hervey's Island - -	Asia	Society Isles	Pacif. Ocean	19° 17' S	158 48W	
Hesseloe Island - -	Europe	Sweden	Sound	56° 12' N	11 43 E	
Heslingbrooke Island	Asia	N. Hebrides	Pacif. Ocean	17° 25' S	168 38W	
Cape la Hogue - -	Europe	France	Eng. Chan.	49° 45' N	1 57W	9 30
Holy Head - -	Europe	Wales	Irish Sea	53° 23' N	4 45W	9 45
Holy Island, Castle - -	Europe	England	Germ. Sea	55° 41' N	1 52W	2 30
Hood's Island - -	Asia	Marqueasas	Pacif. Ocean	9° 26' S	138 52W	
Cape Horn - -	Amer.	Ter. del Fuego	S. Ocean	55° 58' S	67 26W	
Hout Bay - -	Africa	Caffres	Atl. Ocean	34° 3' S	18 19 E	
Howe's Island - -	Asia	Society Isles	Pacif. Ocean	16° 46' S	154 7W	
Huahine Island - -	Asia	Society Isles	Pacif. Ocean	16° 44' S	151 6W	
Hull - -	Europe	England	R. Humber	53° 48' N	0 35W	6 0
L. Humber, entr. - -	Europe	England	Germ. Ocean	53° 55' N	0 19 E	5 15
I.						
Isackall Island - -	Asia	China	Yellow Sea	30° 38' N	122 45 E	
Port Jackson - -	Asia	N. Holland	Pacif. Ocean	33° 52' S	151 19 E	8 15
Ikutskoi - -	Asia	Siberia	Pacif. Ocean	62° 1' N	129 48 E	
Ilho Janeiro - -	Amer.	Brazil	Atl. Ocean	22° 54' S	42 44W	4 30
Iwa Head - -	Asia	Java	Ind. Ocean	6° 49' S	105 14 E	
Ice Cove - -	Amer.	N. Main	Huds. Straits	62° 20' N	69 5W	10 0
Ersey I. St. Aubins - -	Europe	England	Eng. Chan.	49° 13' N	2 12W	0 30
St. Ildefonso's Isles - -	Amer.	Ter. del Fuego	S. Ocean	55° 51' S	69 28W	
Immer Island - -	Asia	N. Hebrides	Pacif. Ocean	19° 16' S	169 46 E	
Imverkeithing - -	Europe	Scotland	Germ. Sea	56° 4' N	3 22W	2 45
Imverness - -	Europe	Scotland	Germ. Sea	57° 36' N	4 15W	11 50
Isanna - -	Africa	Comora Is.	Ind. Ocean	12° 5' S	45 40 E	
John's Island - -	Amer.	S. Carolina	Atl. Ocean	32° 40' N	78 50W	
St. John's - -	Amer.	Newfoundl.	Atl. Ocean	47° 32' N	52° 26W	6 0
St. John de Luz - -	Europe	France	B. Biscay	43° 10' N	1 43W	3 30
St. Joseph - -	Amer.	California	Pacif. Ocean	23° 4' N	109 42W	
Stranane Island - -	Asia	N. Hebrides	Pacif. Ocean	19° 31' S	170 21 E	
Cape St. Juan - -	Amer.	Statenland	Atl. Ocean	54° 47' S	63 47W	4 0
Port St. Julian - -	Amer.	Patagonia	Atl. Ocean	49° 10' S	68 44W	4 45
Shoal Isl., just ab. war	Asia	China	Yellow Sea	31° 28' N	121 30 E	
St. Ives Bay - -	Europe	England	Atl. Ocean	50° 8' N	5 27W	5 0
K.						
Keen Sown Island - -	Asia	China	Yellow Sea	38° 59' N	119 6 E	
St. Kilda - -	Europe	Hebrides	Atl. Ocean	57° 47' N	8 40W	
Kinghorn-ness - -	Europe	Scotland	Germ. Sea	56° 6' N	3 11W	2 30

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<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>HighWd.</i>
Kinnaird's Head -	Europe	Scotland	Germ. Sea	57° 42' N	2° 0' W	0 0'
Kinsale -	Europe	Ireland	Atl. Ocean	51 32 N	8 50W	5 15
Cape Koamaroo -	Asia	N. Zealand	Atl. Ocean	41 34 S	176 30 E	9 30
River Kola -	Europe	Lapland	N. Ocean	68 52 N	32 59 E	
Cape Kongsberg -	Europe	Moen Isle	Baltic Sea	54 58 N	12 31 E	
Korsor, light-house -	Europe	Denmark	Baltic Sea	55 20 N	11 8 E	
Kullen, light-house -	Europe	Sweden	Baltic Sea	56 18 N	12 27 E	
L.						
Grand Ladrone -	Asia	China	Chinese Sea	22 2 N	113 56 E	
Laguna -	Africa	I. Teneriff	Atl. Ocean	28 29 N	16 18W	
Lanceros -	Africa	Canaries	Atl. Ocean	29 14 N	13 26W	0 45
Land's End -	Europe	England	Eng. Chan.	50 6 N	5 54W	4 30
Landscroon -	Europe	Sweden	Sound	55 52 N	12 50 E	
Leghorn -	Europe	Italy	Medit. Sea	43 33 N	10 16 E	
Leith -	Europe	Scotland	Germ. Sea	56 0 N	3 11W	2 20
Leper's Island -	Europe	N. Hebrides	Pacif. Ocean	15 23 S	167 58 E	
Lerwick -	Europe	Shetland I.	N. Ocean	60 13 N	0 55W	11 0
Lesparre -	Europe	France	B. Biscay	45 19 N	0 57W	3 0
Lima -	Amer.	Peru	Pacif. Ocean	12 1 S	76 49W	
Limerick -	Europe	Ireland	R. Shannon	52 22 N	9 53W	4 30
Lion's Bank -	Europe	Ireland	Atl. Ocean	56 40 N	17 45W	
Lion Island -	Asia	China	Yellow Sea	30 11 N	122 60 E	
Lisieux -	Europe	France	Eng. Chan.	49 11 N	0 15 E	
Lisbon -	Europe	Portugal	R. Tagus	38 42 N	9 10W	2 15
Cape Lisburn -	Asia	N. Hebrides	Pacif. Ocean	15 41 S	166 57 E	
Liverpool -	Europe	England	Irish Sea	53 24 N	3 12W	11 15
Lizard -	Europe	England	Eng. Chan.	49 57 N	5 15W	5 30
London -	Europe	England	R. Thames	51 31 N	0 6W	3 0
Loon Loon, Cheer. Is! -	Asia	China	Yellow Sea	37 33 N	122 50 E	
Cape Lorenzo -	Amer.	Peru	Atl. Ocean	1 2 S	80 17W	
Port St. Louis -	Amer.	Hispaniola	Atl. Ocean	18 19 N	73 16W	
Port St. Louis -	Africa	Isle of France	Ind. Ocean	20 10 S	57 27 E	
Louisburg -	Amer.	C. Breton	B. S. Lawr.	45 54 N	59 54W	7 15
St. Lucia Island -	Amer.	Caribbe Isles	Atl. Ocean	13 24 N	60 51W	
Lunden -	Europe	Sweden	Baltic Sea	55 42 N	13 21 E	
Luson -	Europe	France	B. Biscay	46 27 N	1 11W	3 0
M.						
Macao -	Asia	China	Chin. Sea	22 13 N	113 46 E	5 50
Cape Mc'Cartney -	Asia	China	Yellow Sea	36 50 N	122 20 E	
Macassar -	Asia	Celebes	Pacif. Ocean	5 9 S	119 49 E	
Madras -	Asia	India	Ind. Ocean	13 5 N	80 29 E	
Madre de Dios -	Asia	Marquesas	Pacif. Ocean	9 55 S	139 9W	2 30
Magdalena Island -	Asia	Marquesas	Pacif. Ocean	10 25 S	138 49W	
Port Mahon -	Europe	Minorca	Medit. Sea	39 51 N	3 48 E	
Majorca Island -	Europe	Spain	Medit. Sea	39 35 N	2 30 E	
Malacca -	Asia	India	Str. Malacca	2 12 N	102 5 E	
Mallicola Island -	Asia	N. Hebrides	Pacif. Ocean	16 15 S	167 39 E	
St. Maloes -	Europe	France	Eng. Chan.	48 39 N	2 2W	6 0
Malta Island -	Europe	Italy	Medit. Sea	35 54 N	14 28 E	
Manilla -	Asia	Philippines	Pacif. Ocean	14 36 N	120 53 E	
Margalante Isle -	Amer.	Caribbe Isles	Atl. Ocean	15 55 N	61 11W	
Marseilles -	Europe	France	Medit. Sea	43 18 N	5 22 E	
St. Martha -	Amer.	Terra Firma	Atl. Ocean	11 27 N	74 4W	
St. Martin's Isle -	Amer.	Caribbe Isles	Atl. Ocean	18 4 N	63 2W	
Martinico Island -	Amer.	Wind. Island	Atl. Ocean	14 44 N	61 21W	
St. Mary's Isle -	Europe	Scilly Is.	Atl. Ocean	49 57 N	6 43W	3 45
St. Mary's Town -	Europe	Azores	Atl. Ocean	36 57 N	25 9W	
Cape St. Marv -	Amer.	Nova Scotia	Atl. Ocean	44 10 N	66 19W	9 0
Maskolyne's Isles -	Asia	N. Hebrides	Pacif. Ocean	16 32 S	167 59 E	
St. Matthew, lights -	Europe	France	Atl. Ocean	48 20 N	4 47W	2 50
Maurua Isle -	Asia	Society Isles	Pacif. Ocean	16 26 S	152 33W	
Cape May -	Amer.	Pensylvania	Atl. Ocean	39 4 N	74 54W	8 45

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<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Wat.</i>
Island of May -	Europe	Scotland	Germ. Sea	56° 19' N	2° 36' W	2½ 0'
John Mayne's Island -	Europe	Spitzbergen	N. Ocean	71 10 N	9 49 W	
Mayo Island -	Africa	C. Verd	Atl. Ocean	15 10 N	23 5 W	
Mertow -	Asia	China	Yellow Sea	37 57 N	120 38 E	
Mertow Isles -	Asia	China	Yellow Sea	38 4 N	120 29 E	
Mewstone -	Asia	N. Holland	Pacif. Ocean	43 48 S	146 27 E	
Miatea Island -	Asia	Society Isles	Pacif. Ocean	17 52 S	148 6 W	
St. Michael's Island -	Europe	Azores	Atl. Ocean	37 47 N	25 42 W	
Milford -	Europe	Wales	St. Geo. Ch.	51 45 N	5 21 W	5 15
Milo Island -	Europe	Archipela. I.	Medit. Sea	36 41 N	25 0 E	
Molde -	Europe	Norway	N. Ocean	62 44 N	7 11 E	
Cape Montague -	Amer.	Sandw. Land	Atl. Ocean	58 33 S	26 46 W	
Montague Island -	Asia	N. Hebrides	Pacif. Ocean	17 26 S	168 31 E	
Montpellier -	Europe	France	Medit. Sea	43 37 N	3 53 E	
Montserrat Is. N.E. point	Amer.	Caribbe Isles	Atl. Ocean	16 47 N	62 17 W	
Montrose-ness -	Europe	Scotland	Germ. Sea	56 42 N	2 28 W	1 30
Monumont Isles -	Asia	N. Hebrides	Pacif. Ocean	17 14 S	168 38 E	
Morlaix -	Europe	France	Eng. Chan.	48 31 N	3 55 W	5 15
Morotai, W. point	Asia	Sandwich I.	Pacif. Ocean	21 10 S	157 18 W	
Mowee, E. point	Asia	Sandwich I.	Pacif. Ocean	20 50 S	155 56 W	
Cape Mulgrave -	Amer.	Bhering's St.	Frozen Oc.	67 45 N	165 9 W	
Musketto Cove -	Amer.	Greenland	N. Ocean	64 55 N	52 57 W	10 15
Muxara -	Europe	Spain	Medit. Sea	37 4 N	1 28 W	
N						
Nangasachi -	Asia	Japan	Pacif. Ocean	32 32 N	128 46 E	6 0
Nankin -	Asia	China	Yellow Sea	32 5 N	118 46 E	
Nantes -	Europe	France	R. Loire	47 13 N	1 34 W	3 45
Naples -	Europe	Italy	Medit. Sea	40 51 N	14 14 E	9 30
Narbonne -	Europe	France	Medit. Sea	43 11 N	3 0 E	
Naze -	Europe	Norway	Germ. Sea	57 58 N	7 3 E	11 15
Newburgh -	Europe	Scotland	Germ. Sea	57 20 N	2 2 W	0 30
Newcastle -	Europe	England	R. Tyne	55 3 N	1 30 W	3 15
New Year's Harbour	Amer.	Staten Land	Atl. Ocean	54 49 S	64 11 W	
Cape Newenhan -	Amer.	N. W. Coast	Pacif. Ocean	58 42 N	162 21 W	0 0
Nice -	Europe	France	Medit. Sea	43 42 N	7 17 E	
St. Nicholas Mole -	Amer.	Hispaniola	Atl. Ocean	19 49 N	73 30 W	
Nieuport -	Europe	Flanders	Germ. Sea	51 8 N	2 45 E	0 0
Nhngpo, or Liampo -	Asia	China	Yellow Sea	29 58 N	120 18 E	
Cape Noir -	Amer.	Ter del Fuego	Pacif. Ocean	54 32 S	73 3 W	
Nootka -	Amer.	N. W. Coast	Pacif. Ocean	49 36 N	126 43 W	0 20
Nore -	Europe	England	Germ. Sea	51 28 N	0 46 E	0 0
Norfolk Island -	Asia	N. Holland	Pacif. Ocean	29 2 S	168 10 E	1 0
North Cape -	Europe	Lapland	N. Ocean	71 10 N	25 57 E	3 0
Cape North -	Amer.	S. Georgia	Atl. Ocean	54 5 S	33 15 W	
Norton's Sound -	Amer.	N. W. Coast	Frozen Oc.	64 30 N	162 49 W	
Noss Head -	Europe	Scotland	Germ. Sea	58 29 N	3 8 W	9 15
O						
Oaitipeha Bay -	Asia	Otaheite	Pacif. Ocean	17 46 S	149 14 W	
Ohamaneno Harbour	Asia	Uliateah	Pacif. Ocean	16 45 S	151 38 W	11 20
Ohevahoa Island -	Asia	Society Isles	Pacif. Ocean	9 41 S	139 2 W	
Ohitahoo Island -	Asia	Society Isles	Pacif. Ocean	9 55 S	139 6 W	2 20
Ohierk -	Asia	Kamschatka	Sea of Okotsk	59 20 N	143 12 E	
Old Head -	Europe	Orkney Isles	Pentl. Firth	58 46 N	3 1 W	11 30
Oleron Island -	Europe	France	B. Biscay	46 3 N	1 25 W	3 0
Ollnde -	Amer.	Brazil	Atl. Ocean	8 13 S	35 5 W	
Ollone, Sands of -	Europe	France	B. Biscay	46 30 N	1 48 W	3 0
St. Omer's -	Europe	Flanders	Eng. Chan.	50 45 N	15 15 E	
Onateayo Island -	Asia	Society Isles	Pacif. Ocean	9 58 S	138 51 W	
Oneehow -	Asia	Sandwich I.	Pacif. Ocean	21 49 N	160 14 W	
Onalashka Island -	Amer.	N. W. Coast	Pacif. Ocean	53 55 N	166 30 W	
Oporto -	Europe	Portugal	Atl. Ocean	41 10 N	8 27 W	3 15
Orbitello -	Europe	Italy	Medit. Sea	42 32 N	12 7 E	
Ord Head -	Europe	Scotland	Germ. Sea	58 10 N	3 36 W	10 40

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<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Wat.</i>
Orfordness -	Europe	England	Germ. Sea	52° 13' N	1° 35' E	9 45
L'Orient -	Europe	France	B. of Biscay	47 45 N	3 22 W	3 0
New Orleans -	Amer.	Louisiana	R. Mississippi	29 58 N	89 59 W	
Oroolung Island -	Asia	Pelew Isles	Pacif. Ocean	7 18 S	134 49 E	
Orotava -	Africa	Teneriffe	Atl. Ocean	28 23 N	16 24 W	3 0
Cape Orreagal -	Europe	Spain	Atl. Ocean	43 46 N	7 39 W	3 0
Osnaburg Island -	Asia	Society Isles	Pacif. Ocean	17 52 S	148 6 W	
Ostend -	Europe	Flanders	Germ. Sea	51 14 N	2 56 E	0 0
Owharhe Bay -	Asia	Huahine I.	Pacif. Ocean	16 43 S	151 10 W	
Owhyhee { S. extremity { N. extremity { P.	Asia	Sandwich I.	Pacif. Ocean	18 54 N 20 17 N	155 45 W 155 58 W	
Palliser's Isles -	Asia	Society Isles	Pacif. Ocean	15 38 S	146 30 W	
Cape Palliser -	Asia	N. Zealand	Pacif. Ocean	41 38 S	175 23 E	
Palma Island -	Africa	Canaries	Atl. Ocean	28 37 N	17 50 W	
Palmerston's Island -	Asia	Society Isles	Pacif. Ocean	18 0 S	162 57 W	
Parafana -	Amer.	Mexico	Pacif. Ocean	8 48 N	80 21 W	3 0
Paoom Island -	Asia	N. Hebrides	Pacif. Ocean	16 30 S	168 29 E	
Paris -	Europe	France	R. Seine	48 50 N	2 19 E	
Patuxford -	Europe	Iceland	N. Ocean	65 86 N	24 10 W	
St. Paul's Island -	Africa	Madagascar	Ind. Ocean	37 51 S	77 48 E	
St. Paul de Leon -	Europe	France	Eng. Chan.	48 41 N	4 0 W	4 0
Pedro Blanco -	Asia	China	Yellow Sea	22 19 N	116 18 E	
Cape Pembroke -	Amer.	New Wales	Hudson's Bay	62 57 N	82 1 W	0 0
Pentbnd Skerries -	Europe	Scotland	N. Ocean	58 42 N	3 1 W	10 50
Perpignan -	Europe	France	Medit. Sea	42 42 N	2 54 E	
St. Peter's Fort -	Amer.	Martinico	Atl. Ocean	14 44 N	61 21 W	
St. Peter's Island -	Amer.	Newfoundl.	Atl. Ocean	46 46 N	56 17 W	
Peterhead -	Europe	Scotland	Germ. Sea	57 32 N	1 46 W	0 0
Petersburg -	Europe	Russia	Baltic Sea	59 56 N	30 19 E	
Petit Goave -	Amer.	Hispaniola	Atl. Ocean	18 27 N	72 52 W	
Petropawloskoi -	Asia	Kamschatka	G. of Awatska	58 1 N	158 35 E	
Philadelphia -	Amer.	Pensylvania	R. Delaware	39 57 N	75 13 W	
St. Philip's Fort -	Europe	Minorca	Medit. Sea	39 51 N	3 48 E	
Pickersgill's Harbour -	Asia	N. Zealand	Pacif. Ocean	45 47 S	166 18 E	
Pickersgill's Island -	Amer.	S. Georgia	Atl. Ocean	54 42 S	36 58 W	
Pico -	Europe	Azores	Atl. Ocean	38 29 N	28 26 W	
Fort du Pillier -	Europe	France	B. of Biscay	47 2 N	2 22 W	3 0
Isle of Pines -	Asia	N. Caledonia	Pacif. Ocean	22 38 S	167 38 E	
Pitcairn's Island -	Amer.	Chili	Pacif. Ocean	25 22 S	133 22 W	
Plymouth -	Europe	England	Eng. Chan.	50 22 N	4 16 W	6 0
Pondicherry -	Asia	India	B. Bengal	11 42 N	79 53 E	
Port Glasgow -	Europe	Scotland	R. Clyde	55 56 N	4 38 W	11 30
Portland -	Europe	England	Eng. Chan.	50 31 N	2 36 W	7 30
Portland Island -	Europe	Norway	North Sea	63 22 N	18 54 W	
Portland Island -	Asia	N. Zealand	Pacif. Ocean	39 25 S	178 12 E	
Porto Bello -	Amer.	New Spain	Carib. Sea	9 33 N	79 50 W	
Porto Sancto -	Africa	Canaries	Atl. Ocean	32 58 N	16 25 W	
Port Royal -	Amer.	Jamaica	Atl. Ocean	18 0 N	76 45 W	
Port Royal -	Amer.	Martinico	Atl. Ocean	14 36 N	61 9 W	
Port Paix -	Amer.	Hispaniola	Atl. Ocean	19 58 N	73 2 W	
Port Praslin -	Asia	N. Ireland	Pacif. Ocean	4 49 S	153 5 E	
Port Praya -	Africa	St. Jago	Atl. Ocean	14 54 N	23 29 W	11 0
Portsmouth -	Europe	England	Eng. Chan.	50 47 N	1 6 W	11 15
Prince of Wales Fort -	Amer.	New Wales	Hudson's Bay	58 48 N	94 7 W	
Providence -	Amer.	N. England	Atl. Ocean	41 51 N	71 26 W	
Pudyoua -	Asia	N. Caledonia	Pacif. Ocean	20 18 S	164 41 E	6 30
Pulo Condor Island -	Asia	Cambaya	Ind. Ocean	8 40 N	107 20 E	
Pulo Limos Island -	Asia	Gulf of Siam	Ind. Ocean	3 0 N	104 25 E	
Pylestap's Island -	Asia	Friendly Isles	Pacif. Ocean	22 23 S	175 41 W	

TABLE I.
The Latitudes and Longitudes of Places.

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Water</i>
Q.						
Quebec - - -	Amer.	Canada	R. St. Lawr,	46° 55' N	69° 59' W	7h 30'
Quimper - - -	Europe	France	B. of Biscay	47 58 N	4 7 W	2 30
Cape Quirós - -	Asia	N. Hebrides	Pacif. Ocean	14 56 S	167 20 E	3 0
Quito - - -	Amer.	Peru	Pacif. Ocean	0 13 S	77 55 W	
R.						
Ramhead - - -	Europe	England	Eng. Chan.	50 19 N	4 20 W	6 0
Ramsay - - -	Europe	Ile of Man	Irish Sea	54 17 N	4 26 W	10 30
Ramsgate - - -	Europe	England	Germ. Sea	51 20 N	1 25 E	10 30
Rattray-head - -	Europe	Scotland	Germ. Sea	57 38 N	1 49 W	0 0
Ravenna - - -	Europe	Italy	Adriatic Sea	44 25 N	12 10 E	
Recif - - -	Amer.	Brazil	Atl. Ocean	8 10 S	35 35 W	
Redhead - - -	Europe	Scotland	Germ. Sea	56 37 N	2 31 W	1 40
Cape Reikianess -	Europe	Iceland	N. Ocean	63 55 N	22 47 W	
Resolution Bay -	Asia	Ohitahoo	Pacif. Ocean	9 55 S	139 9 W	2 30
Cape Resolution -	Amer.	N. Main	Hudson's St.	61 29 N	65 15 W	7 0
Resolution Island -	Asia	Society Isles	Pacif. Ocean	17 23 S	141 45 W	
Port Resolution -	Asia	Tanna I.	Pacif. Ocean	19 32 S	169 41 E	
Rhe Island - - -	Europe	France	B. of Biscay	46 15 N	1 35 W	3 15
Rhode Island - -	Amer.	New Engl.	Atl. Ocean	41 28 N	71 30 W	8 15
Riga - - -	Europe	Livonia	Baltic Sea	57 5 N	25 5 E	
Rimini - - -	Europe	Italy	Mediterr. Sea	44 4 N	12 34 E	
Rio Janeiro - - -	Amer.	Brazil	Atl. Ocean	22 54 S	42 44 W	
Robin Hood's Bay -	Europe	England	Germ. Sea	54 25 N	0 13 W	3 0
Rochelle - - -	Europe	France	B. of Biscay	46 9 N	1 10 W	3 45
Rochester - - -	Europe	England	Germ. Sea	51 26 N	0 30 E	0 45
Rochfort - - -	Europe	France	B. of Biscay	45. 56 N	0 59 W	4 15
Rock of Zubory -	Europe	Portugal	Atl. Ocean	38 45 N	9 35 W	3 0
Rodrigues Island -	Africa	Madagascar	Ind. Ocean	19 41 S	63 10 E	
Rome - - -	Europe	Italy	Mediterr. Sea	41 54 N	12 29 E	
Ronaldsha - - -	Europe	Scotland	Orkney Isles	59 22 N	2 35 W	10 30
Rothersea - - -	Europe	Scotland	Atl. Ocean	55 50 N	5 17 W	11 0
Rotterdam - - -	Europe	Unit. Prov.	Germ. Sea	51 56 N	4 28 E	3 40
Rotterdam Island -	Asia	Friendly Isles	Pacif. Ocean	20 16 S	174 30 W	
Rouen - - -	Europe	France	Eng. Chan.	49 27 N	1 5 W	1 15
Cape Roxo - - -	Africa	Guinea	Atl. Ocean	11 47 N	16 55 W	
Rye - - -	Europe	England	Germ. Sea	50 55 N	0 44 E	11 15
S.						
Saba Island - - -	Amer.	Caribbe Is.	Atl. Ocean	17 39 N	63 17 W	
Cape Sable - - -	Amer.	Nova Scotia	Atl. Ocean	43 24 N	65 39 W	8 15
Saintes - - -	Europe	France	B. of Biscay	45 45 N	0 39 W	3 0
Salem - - -	Amer.	Unit. States	Atl. Ocean	42 34 N	70 55 W	
Salisbury Island -	Amer.	N. Main	Hudson's St.	63 29 N	76 48 W	11 Q
Sall Island - - -	Africa	Cape Verd	Atl. Ocean	16 38 N	22 56 W	
Sallee - - -	Africa	Morocco	Atl. Ocean	34 10 N	6 43 W	
Salonique - - -	Europe	Turkey	Archipelago	40 41 N	23 8 E	
Salvages Islands -	Africa	Canaries	Atl. Ocean	30 0 N	15 54 W	
Samana - - -	Amer.	Hispaniola	Atl. Ocean	19 15 N	69 16 W	
Cape Samberough -	Amer.	Nova Scotia	Atl. Ocean	44 33 N	63 32 W	8 0
Sancto Cruz - - -	Africa	Teneriffe	Atl. Ocean	28 27 N	16 16 W	
Sandwich - - -	Europe	England	Eng. Chan.	51 19 N	1 15 E	11 30
Sandwich Bay - -	Amer.	S. Georgia	Atl. Ocean	54 42 S	36 12 W	
Cape Sandwich - -	Asia	Mallicola	Pacif. Ocean	16 28 S	167 59 E	
Sandwich Harbour -	Asia	Mallicola	Pacif. Ocean	16 25 S	167 53 E	
Sandwich Island -	Asia	N. Hebrides	Pacif. Ocean	17 41 S	168 33 E	
Sandy Cape - - -	Asia	N. Holland	Pacif. Ocean	24 45 S	153 9 E	
Cape Saunders - -	Amer.	Sandwich L.	Atl. Ocean	54 6 S	36 57 W	
Saunders's Island -	Amer.	S. Georgia	Atl. Ocean	58 0 S	26 58 W	
Savage Island - -	Asia	N. Hebrides	Pacif. Ocean	19 2 S	169 30 W	
Scarborough - - -	Europe	England	Germ. Sea	54 21 N	0 18 W	3 45
Scaw light - - -	Europe	Jutland	Sound	57 44 N	10 37 E	
Schelling Island -	Europe	United Prov.	Germ. Sea	53 17 N	5 7 E	

TABLE I.
The Latitudes and Longitudes of Places.

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Wat.</i>
Seal Island -	Amer.	New England	Atl. Ocean	43° 36' N	65° 56' W	8 45'
Cape St. Sebastian -	Africa	Madagascar	Ind. Ocean	12 30 S	46 25 E	
Senegal -	Africa	Negroland	Atl. Ocean	15 53 N	16 21 W	10 30
Seychelles Island -	Asia	India	Ind. Ocean	4 37 S	55 35 E	5 30
Seyne River, entr. -	Europe	France	Eng. Chan.	49 36 N	0 30 E	9 0
Shepherd's Isles -	Asia	N. Hebrides	Pacif. Ocean	16 58 N	168 42 E	
Siam -	Asia	India	Bay of Siam	14 18 N	100 50 E	
Simon's Bay -	Africa	Caffres	Atl. Ocean	34 10 S	18 22 E	3 30
Sligo -	Europe	Ireland	Atl. Ocean	54 15 N	8 49 W	5 30
Slyne Head -	Europe	Ireland	Atl. Ocean	53 20 N	10 45 W	7 0
Smyrna -	Asia	Natolia	Medit. Sea	38 28 N	27 20 E	
Mount Snævell -	Europe	Iceland	N. Ocean	64 52 N	23 54 W	
Sombavera Isles -	Amer.	West Indies	Carib. Sea	18 38 N	63 37 W	
River Somme -	Europe	France	Eng. Chan.	50 18 N	1 35 E	11 18
Sooloo -	Asia	India	Ind. Ocean	5 57 N	121 15 E	
Southampton -	Europe	England	Eng. Chan.	50 55 N	1 5 W	0 0
Cape South -	Asia	N. Zealand	Atl. Ocean	47 19 S	167 8 E	
Southern Thule -	Amer.	Sandw. Land	Atl. Ocean	59 34 S	27 45 W	
Cape Spartel -	Africa	Barbary	Atl. Ocean	35 49 N	5 54 W	3 0
Speaker Bank -	Asia	India	Ind. Ocean	4 45 S	72 57 E	
Sproe Island -	Europe	Denmark	Belt	55 20 N	10 58 E	
Spurn -	Europe	England	Germ. Sea	53 41 N	0 17 E	5 20
Staalet, N. point Stadeland -	Europe	Norway	N. Ocean	62 13 N	5 11 E	
Staples, lights -	Europe	England	Germ. Sea	55 39 N	1 42 W	3 0
Start point -	Europe	England	Eng. Chan.	50 9 N	3 51 W	6 45
Stockholm -	Europe	Sweden	G. of Bothnia	59 21 N	18 4 E	
Stockton -	Europe	England	Germ. Sea	54 41 N	1 9 W	3 30
Stonehaven -	Europe	Scotland	Germ. Sea	56 58 N	2 14 W	1 0
Strangford Bay -	Europe	Ireland	Atl. Ocean	54 21 N	5 50 W	10 30
Straumness -	Europe	Iceland	N. Ocean	65 40 N	24 29 W	
Success Bay -	Amer.	Ter. del Fuego	Atl. Ocean	54 50 S	65 25 W	4 30
Success Cape -	Amer.	Ter. del Fuego	Atl. Ocean	55 1 S	65 27 W	4 30
Sunborough Head -	Europe	Shetland Is.	N. Ocean	59 52 N	1 19 W	4 0
Surat -	Asia	India	Ind. Ocean	21 10 N	72 22 E	
Swansea -	Europe	Wales	Bristol Chap.	51 40 N	4 30 W	6 0
T. -						
Table Island -	Asia	N. Hebrides	Pacif. Ocean	15 58 S	167 7 E	
Tamarind's Bay -	Africa	Isle of France	Ind. Ocean	20 19 S	57 20 E	
Tamarin Town -	Africa	I. Socotra	Ind. Ocean	12 30 N	-53 9 E	9 0
Tanna -	Asia	N. Hebrides	Pacif. Ocean	19 32 S	169 41 E	3 0
Taoukaa Island -	Asia	Society Isles	Pacif. Ocean	14 30 S	145 9 W	
Tarascon -	Europe	France	Medit. Sea	43 48 N	4 40 E	
Tarbet -	Europe	Scotland	Lockhine	55 52 N	5 20 W	11 0
Tarbet-ness -	Europe	Scotland	Germ. Sea	57 54 N	3 48 W	11 30
Tassacorta -	Africa	I. Palma	Atl. Ocean	28 38 N	17 58 W	
Tay Bar -	Europe	Scotland	Germ. Sea	56 27 N	2 42 W	2 0
Tees' Mouth -	Europe	England	Germ. Sea	54 36 N	0 57 W	3 0
Temontengis -	Asia	Sooloo Is.	Pacif. Ocean	5 57 N	120 33 E	
City of Ten he Fia -	Asia	China	Yellow Sea	37 46 N	120 36 E	
Teneriffe, Peak -	Africa	Canaries	Atl. Ocean	28 18 N	16 29 W	3 0
Tercera Isles -	Europe	Azores	Atl. Ocean	38 45 N	27 6 W	
River Thames, mouth -	Europe	England	Germ. Sea	51 28 N	1 5 E	1 30
St. Thomas' Isle -	Amer.	Virgin Isles	Atl. Ocean	18 22 N	64 51 W	
Cape Tiburon -	Amer.	St. Domingo	Atl. Ocean	18 17 N	74 31 W	
Cape Tienex -	Africa	Barbary	Medit. Sea	36 32 N	1 19 E	
Tien Lien -	Asia	China	Yellow Sea	39 1 N	117 36 E	
Timor, S. W. point -	Asia	India	Ind. Ocean	10 23 S	129 59 E	
Timor Land, S. point -	Asia	India	Ind. Ocean	8 15 S	131 54 E	
Timmouth -	Europe	England	Germ. Sea	55 3 N	1 22 W	8 0
Tobernory -	Europe	Scotland	Atl. Ocean	56 37 N	6 11 W	5 30
Tod Head -	Europe	Scotland	Germ. Sea	56 52 N	2 17 W	1 20

TABLE I.
The Latitudes and Longitudes of Places.

13

<i>Names of Places.</i>	<i>Cont.</i>	<i>Country.</i>	<i>Sea, or Coast.</i>	<i>Latitude.</i>	<i>Longitude.</i>	<i>High Water</i>
Tolaga Bay - -	Asia	N. Zealand	Pacif. Ocean	38° 21' S	178° 34' E	6 0
Tonga Tabu Island - -	Asia	Friendly Is.	Pacif. Ocean	21 9 S	174 46 W	
Torbay - -	Europe	England	Eng. Chan.	50 33 N	3 42 W	6 15
Tornea - -	Europe	Sweden	G. Bothnia	65 51 N	24 12 E	
Cape Tosa - -	Europe	Spain	Med. Sea	41 43 N	2 54 E	
Toulon - -	Europe	France	Medit. Sea	43 7 N	5 57 E	
Toward Point - -	Europe	Scotland	Atl. Ocean	55 52 N	5 58 W	3 30
Traitor's Head - -	Asia	Erramanga	Pacif. Ocean	18 43 S	169 20 E	
Cape Trefalgar - -	Europe	Spain	Atl. Ocean	36 10 N	6 1 W	
Treguier - -	Europe	France	Eng. Chan.	48 47 N	3 14 W	5 30
Trincomale - -	Asia	Ceylon	Ind. Ocean	8 32 S	81 11 E	
Tripoli - -	Africa	Barbary	Medit. Sea	32 54 N	13 5 E	
Troup Head - -	Europe	Scotland	Germ. Sea	57 42 N	2 17 W	0 0
Cape Turnagain - -	Asia	N. Zealand	Pacif. Ocean	40 28 S	176 56 E	
Turtle Island - -	Asia	Friendly Is.	Pacif. Ocean	10 49 S	177 57 W	
Typa Road - -	Asia	China	Chinese Sea	22 9 N	113 45 E	
U. Uliateah - -	Asia	Society Isles	Pacif. Ocean	16 45 S	151 31 W	
Upsal - -	Europe	Sweden	R. Sala	59 52 N	17 42 E	
Uraniberg - -	Europe	Denmark	Baltic Sea	55 54 N	12 52 E	
Ushant, lights - -	Europe	France	Eng. Chan.	48 28 N	5 4 W	4 30
V. St. Valery - -	Europe	France	Eng. Chan.	50 11 N	1 37 E	10 30
St. Vallery - -	Europe	France	Eng. Chan.	49 52 N	0 41 E	10 0
Valparaiso - -	Amer.	Chili	Pacif. Ocean	33 3 S	72 19 W	
Van Dieman's Head - -	Asia	Tongatabu	Pacif. Ocean	21 4 S	174 56 W	
Vannes - -	Europe	France	B. Biscay	47 39 N	2 46 W	3 45
Vence - -	Europe	France	Medit. Sea	43 43 N	7 7 E	
Venice - -	Europe	Italy	Medit. Sea	45 26 N	12 4 E	9 0
Venus Point - -	Asia	Otaheite	Pacif. Ocean	17 29 S	149 36 W	10 38
Vera Cruz - -	Amer.	New Spain	G. Mexico	19 12 N	97 30 W	
Cape Verd - -	Africa	Negroland	Atl. Ocean	14 45 N	17 33 W	
Vigo - -	Europe	Spain	Atl. Ocean	42 14 N	8 28 W	3 15
Villefranche - -	Europe	Italy	Medit. Sea	43 40 N	7 19 E	
Cape St. Vincent - -	Europe	Portugal	Atl. Ocean	37 2 N	9 2 W	3 0
Cape Virgin - -	Amer.	Patagonia	Atl. Ocean	52 23 S	67 54 W	0 0
Virgin Gorda, Fort - -	Amer.	West Indies	Atl. Ocean	18 18 N	64 0 W	
W. Prince of Wales' Fort - -	Amer.	N. Wales	Hudson's Bay	58 47 N	94 7 W	
Cape Walsingham - -	Amer.	N. Britain	Hudson's Str.	62 39 N	77 49 W	0 0
Wardhus - -	Europe	Lapland	N. Ocean	70 23 N	31 7 E	
Westman Isles - -	Europe	Iceland	N. Ocean	63 20 N	20 28 W	
Weymouth - -	Europe	England	Eng. Chan.	50 37 N	2 35 W	7 20
Whitby - -	Europe	England	Germ. Sea	54 29 N	0 53 W	3 20
Whitehaven - -	Europe	England	Irish Sea	54 25 N	3 23 W	11 15
Whitsuntide Island - -	Asia	N. Hebrides	Pacif. Ocean	15 44 S	168 20 E	
Fort William - -	Asia	Bengal	Hughly R.	22 35 N	88 29 E	
Willis' Isles - -	Amer.	S. Georgia	Atl. Ocean	54 0 S	38 30 W	
Woahoo Island - -	Asia	Sandwich Is.	Pacif. Ocean	21 43 N	157 51 W	
Y. Yarmouth - -	Europe	England	Germ. Sea	52 37 N	1 44 E	9 0
Ylo - -	Amer.	Peru	Pacif. Ocean	17 36 S	71 13 W	
York Fort - -	Amer.	New Wales	Hudson's Bay	57 2 N	92 52 W	9 15
Yorkminster - -	Amer.	Ter. del Fue.	S. Ocean	55 26 S	70 8 W	
New York - -	Amer.	Jersey	Atl. Ocean	40 43 N	74 10 W	3 0
Youghall - -	Europe	Ireland	Atl. Ocean	51 48 N	8 6 W	4 30
Z. Zachee - -	Amer.	Antilles	Atl. Ocean	18 24 N	67 43 W	
Zant Island - -	Europe	Italy	Medit. Sea	37 48 N	21 20 E	
Zanzibar Island - -	Africa	Zanguebar	Ind. Ocean	6 50 S	40 5 E	
Zaro - -	Europe	Dalmatia	Medit. Sea	44 20 N	16 50 E	
Zierick Zee - -	Europe	United Prov.	Germ. Sea	51 38 N	3 58 E	1 30
Zoara - -	Africa	Barbary	Medit. Sea	32 45 N	11 55 E	

TABLE II.

TO FIND THE MOON'S AGE BY INSPECTION.

MONTHS

YEARS.

Jan.	Feb.	Mar.	May.	June.	July.	Aug.	Sept.	Nov.
April.							Oct.	Dec.

DAYS.

MOON'S AGE.

1	31	29	30	28	27	26	25	23	21	5	16	27	8	19	1	12	23	4	F	25	7	18	29	10	21	2	13	24	
2	2	30	1	29	28	27	26	24	22	6	17	28	9	20	2	13	24	5	16	27	8	19	N	1	12	23	3	14	25
3	3	1	2	30	29	28	27	25	23	7	18	29	10	21	3	14	25	6	17	28	9	20	2	13	24	4	F	26	
4	4	2	3	1	30	29	28	26	24	8	19	N	11	22	4	F	26	7	18	29	10	21	3	14	25	5	16	27	28
5	5	3	4	2	30	29	27	25	23	9	20	1	12	23	5	16	27	8	19	N	11	22	4	F	26	6	17	28	29
6	6	4	5	3	1	31	30	28	26	10	21	2	13	24	6	17	28	9	20	1	12	23	5	16	27	7	18	29	30
7	7	5	6	4	3	2	1	31	29	11	22	3	14	25	7	18	29	10	21	2	13	24	6	17	28	8	19	N	1
8	8	6	7	5	4	3	2	30	28	12	23	4	F	26	8	19	N	11	22	3	14	25	7	18	29	9	20	1	2
9	9	7	8	6	5	4	3	1	31	13	24	5	16	27	9	20	1	12	23	4	F	26	8	19	10	21	2	13	3
10	10	8	9	7	6	5	4	2	30	14	25	6	17	28	10	21	2	13	24	5	16	27	9	20	11	22	3	14	4
11	11	9	10	8	7	6	5	3	1	F	26	7	18	29	11	22	3	14	25	6	17	28	9	20	1	12	23	4	5
12	12	10	11	9	8	7	6	4	2	16	27	8	19	N	12	23	4	F	26	7	18	29	10	21	2	13	24	5	6
13	13	11	12	10	9	8	7	5	3	17	28	9	20	1	13	24	5	16	27	8	19	N	11	22	3	14	25	6	7
14	14	12	13	11	10	9	8	6	4	18	29	10	21	2	14	25	6	17	28	9	20	1	12	23	4	F	26	7	8
15	15	13	14	12	11	10	9	7	5	19	N	11	22	3	F	26	7	18	29	10	21	2	13	24	5	16	27	8	9
16	16	14	15	13	12	11	10	8	6	20	1	12	23	4	16	27	8	19	N	11	22	3	14	25	6	17	28	9	10
17	17	15	16	14	13	12	11	9	7	21	2	13	24	5	17	28	9	20	1	12	23	4	F	26	7	18	29	10	11
18	18	16	17	15	14	13	12	10	8	22	3	14	25	6	18	29	10	21	2	13	24	5	16	27	8	19	N	11	12
19	19	17	18	16	15	14	13	11	9	23	4	F	26	7	19	N	11	22	3	14	25	6	17	28	9	20	1	2	13
20	20	18	19	17	16	15	14	12	10	24	5	16	27	8	20	1	12	23	4	F	26	7	18	29	10	21	2	13	13
21	21	19	20	18	17	16	15	13	11	25	6	17	28	9	21	2	13	24	5	16	27	8	19	N	11	22	3	14	14
22	22	20	21	19	18	17	16	14	12	26	7	18	29	10	22	3	14	25	6	17	28	9	20	1	12	23	4	F	15
23	23	21	22	20	19	18	17	15	13	27	8	19	N	11	23	4	F	26	7	18	29	10	21	2	13	24	5	16	16
24	24	22	23	21	20	19	18	16	14	28	9	20	1	12	24	5	16	27	8	19	N	11	22	3	14	25	6	17	17
25	25	23	24	22	21	20	19	17	15	29	10	21	2	13	25	6	17	28	9	20	1	12	23	4	F	26	7	18	18
26	26	24	25	23	22	21	20	18	16	N	11	22	3	14	26	7	18	29	10	21	2	13	24	5	16	27	8	19	19
27	27	25	26	24	23	22	21	19	17	1	12	23	4	16	27	8	19	N	11	22	3	14	25	6	17	28	9	20	20
28	28	26	27	25	24	23	22	20	18	2	13	24	5	17	28	9	20	1	12	23	4	F	26	7	18	29	10	21	21
29	29	27	28	26	25	24	23	21	19	3	14	25	6	18	29	10	21	2	13	24	5	16	27	8	19	N	11	22	22
30	30	28	29	27	26	25	24	22	20	4	F	26	7	19	N	11	22	3	14	25	6	17	28	9	20	1	2	13	23

TABLE III.
Epacts of Years.

Years.	Epacts.	Years.	Epacts.
B 1804	18 ^d 13 ^h 37'	B 1844	10 ^d 22 ^h 14'
1805	29 4 59	1845	21 13 26
1806	10 7 16	1846	2 15 53
1807	20 22 27	1847	13 7 4
B 1808	3 0 55	B 1848	24 22 16
1809	13 16 6	1849	6 0 43
1810	24 7 18	1850	16 15 55
1811	5 9 45	1851	27 7 6
B 1812	17 0 57	B 1852	9 9 34
1813	27 16 8	1853	20 0 45
1814	8 18 35	1854	1 3 12
1815	19 9 47	1855	11 18 24
B 1816	1 12 14	B 1856	23 9 35
1817	12 3 26	1857	4 12 2
1818	22 18 37	1858	15 3 14
1819	3 21 4	1859	25 17 26
B 1820	15 22 16	B 1860	7 20 53
1821	26 3 27	1861	18 12 4
1822	7 5 55	1862	29 3 16
1823	17 21 6	1863	10 5 43
B 1824	29 12 18	B 1864	21 20 55
1825	10 14 45	1865	2 23 22
1826	21 5 57	1866	13 14 33
1827	2 8 24	1867	24 5 45
B 1828	13 23 35	B 1868	6 8 12
1829	24 14 47	1869	16 23 24
1830	5 17 14	1870	27 14 35
1831	16 8 26	1871	8 17 3
B 1832	27 23 37	B 1872	20 8 14
1833	9 2 4	1873	1 10 42
1834	19 17 16	1874	12 1 53
1835	0 19 43	1875	22 17 4
B 1836	12 10 55	B 1876	4 20 32
1837	23 2 6	1877	15 10 43
1838	4 4 34	1878	26 1 55
1839	14 19 45	1879	7 4 22
B 1840	26 10 56	B 1880	18 19 33
1841	7 13 24	1881	29 10 45
1842	18 4 35	1882	10 13 12
1843	28 19 47	1883	21 4 24

TABLE IV.
Epacts of Months.

Months.	Epacts.	Months.	Epacts.
January	0 ^d 0 ^h 0'	July	3 ^d 19 ^h 36'
Febr.	1 11 16	August	5 6 52
March	29 11 16	Sept.	6 18 8
April	1 9 48	October	7 5 24
May	1 21 4	Novem.	8 16 40
June	3 8 20	Decem.	9 3 55

In Leap Years, a day is to be subtracted from the sum of the Epacts, in the months of January and February.

TABLE V. 15
Correction to be added to the Time of
High Water at Full and Change.

Moon's Age.	Correction.	Moon's Age.	Correction.
0 ^d 0 ^h	0 ^h 0'	15 ^d 0 ^h	12 ^h 8'
6	0 8	6	12 17
12	0 17	12	12 26
18	0 26	18	12 36
1 0	0 36	16 0	12 45
6	0 45	6	12 54
12	0 54	12	13 2
18	1 2	18	13 11
2 0	1 11	17 0	13 19
6	1 19	6	13 28
12	1 28	12	13 37
18	1 37	18	13 46
3 0	1 46	18 0	13 54
6	1 54	6	14 3
12	2 3	12	14 12
18	2 12	18	14 21
4 0	2 21	19 0	14 30
6	2 30	6	14 40
12	2 40	12	14 50
18	2 50	18	15 1
5 0	3 1	20 0	15 11
6	3 11	6	15 21
12	3 21	12	15 32
18	3 32	18	15 44
6 0	3 44	21 0	15 56
6	3 56	6	16 9
12	4 9	12	16 23
18	4 23	18	16 37
7 0	4 37	22 0	16 51
6	4 51	6	17 6
12	5 6	12	17 22
18	5 22	18	17 40
8 0	5 40	23 0	18 0
6	6 0	6	18 20
12	6 20	12	18 39
18	6 39	18	18 58
9 0	6 58	24 0	19 18
6	7 18	6	19 37
12	7 37	12	19 56
18	7 56	18	20 14
10 0	8 14	25 0	20 31
6	8 31	6	20 47
12	8 47	12	21 2
18	9 2	18	21 17
11 0	9 17	26 0	21 31
6	9 31	6	21 44
12	9 44	12	21 56
18	9 56	18	22 9
12 0	10 9	27 0	22 21
6	10 21	6	22 32
12	10 32	12	22 43
18	10 43	18	22 53
13 0	10 53	28 0	23 3
6	11 3	6	23 13
12	11 13	12	23 23
18	11 23	18	23 33
14 0	11 33	29 0	23 42
6	11 42	6	23 51
12	11 51	12	24 0
18	12 0		

TABLE VI.

CONTAINING THE

EQUATION OF THE TIME OF HIGH WATER,

Depending on the angular distance between the Sun and Moon, and on the distance of the Moon from the Earth.

Appar. time of moon's transit.	Moon's Horizontal Parallax.									Appar. time of moon's transit.
	54'	55'	56'	57'	58'	59'	60'	61'		
0 ^h 0'	add	add	add	add	add	add	add	add	12 ^h 0'	
10	19'	20'	21'	22'	23'	25'	26'	27'	10	
20	14	15	16	17	18	19	20	21	20	
30	12	13	13	14	15	16	17	17	30	
40	10	10	11	11	12	13	13	14	40	
50	7	8	8	8	9	9	10	10	50	
1 0	5	5	5	6	6	6	7	7	13 0	
10	2	3	3	3	3	3	3	3	10	
20	sub	sub	sub	sub	sub	sub	sub	sub	20	
30	2	3	3	3	3	3	3	3	30	
40	5	5	5	6	6	6	7	7	40	
50	7	8	8	8	9	9	10	10	50	
2 0	10	10	11	11	12	13	13	14	14 0	
10	12	13	13	14	15	16	17	17	10	
20	14	15	16	17	18	19	20	21	20	
30	17	18	19	20	21	22	23	24	30	
40	19	20	21	22	23	25	26	27	40	
50	21	22	24	25	26	28	29	30	50	
3 0	23	25	26	27	29	30	32	34	15 0	
10	25	27	28	30	31	33	35	37	10	
20	27	29	30	32	34	36	38	40	20	
30	29	31	33	34	36	38	40	42	30	
40	31	33	35	37	39	41	43	45	40	
50	33	35	37	39	41	43	45	47	50	
4 0	34	36	38	40	43	45	47	49	16 0	
10	36	38	40	42	44	47	49	52	10	
20	37	39	41	44	46	48	51	53	20	
30	38	40	42	45	47	50	52	55	30	
40	39	41	43	46	48	51	53	56	40	
50	40	42	44	47	49	52	54	57	50	
5 0	40	42	45	47	50	52	55	58	17 0	
10	40	42	45	47	50	52	55	58	10	
20	40	42	44	47	49	52	55	57	20	
30	39	41	44	46	48	51	54	56	30	
40	38	40	42	45	47	50	52	55	40	
50	37	39	41	43	45	48	50	53	50	
6 0	35	37	39	41	43	45	47	50	18 0	
Appar. ime of noon's transit.	54'	55'	56'	57'	58'	59'	60'	61'	Appar. time of moon's transit.	
Moon's Horizontal Parallax.										
Appar. time of moon's transit.	Moon's Horizontal Parallax.									Appar. time of moon's transit.
	54'	55'	56'	57'	58'	59'	60'	61'		
6 ^h 0'	sub	sub	sub	sub	sub	sub	sub	sub	18 ^h 0'	
10	33'	37'	39'	41'	43'	45'	47'	50'	10	
20	32	34	36	38	40	42	44	46	20	
30	29	30	32	34	36	38	40	42	30	
40	25	27	28	30	31	33	35	36	40	
50	21	22	23	25	26	27	29	30	50	
7 0	16	17	18	19	20	21	22	23	7 0	
10	11	12	12	13	14	14	15	16	10	
20	6	6	6	7	7	7	8	8	20	
30	add	add	add	add	add	add	add	add	30	
40	6	6	6	7	7	7	8	8	40	
50	11	12	12	13	14	15	15	16	50	
8 0	16	17	18	19	20	21	22	23	8 0	
10	21	22	23	25	26	27	29	30	10	
20	25	27	28	30	31	33	35	36	20	
30	29	30	32	34	36	38	40	42	30	
40	32	34	36	38	40	42	44	46	40	
50	35	37	39	41	43	45	47	50	50	
9 0	37	39	41	43	45	48	50	53	9 0	
10	38	40	42	45	47	50	52	55	10	
20	39	41	44	46	48	51	54	56	20	
30	40	42	44	47	49	52	55	57	30	
40	40	42	45	47	50	52	55	58	40	
50	40	42	44	47	49	52	54	57	50	
10 0	39	41	43	46	48	51	53	56	22 0	
20	38	40	42	45	47	50	52	55	10	
30	37	39	41	44	46	48	51	53	20	
40	36	38	40	42	44	47	49	52	30	
50	34	36	38	40	43	45	47	49	40	
11 0	33	35	37	39	41	43	45	47	50	
20	31	33	35	37	39	41	43	45	23 0	
30	29	31	33	34	36	38	40	42	10	
40	27	29	30	32	34	36	38	40	20	
50	25	27	28	30	31	33	35	37	30	
12 0	23	25	26	27	29	30	32	34	40	
19	21	22	24	25	26	28	29	30	50	
20	19	20	21	22	23	25	26	27	24 0	
Appar. time of noon's transit.	54'	55'	56'	57'	58'	59'	60'	61'	Appar. time of moon's transit.	
Moon's Horizontal Parallax.										

TABLE VII.

THE MILES AND PARTS OF A MILE IN A DEGREE OF LONGITUDE
AT EVERY DEGREE OF LATITUDE.

D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.	D.L.	Miles.
1	59.99	16	57.67	31	51.43	46	41.68	61	29.09	76	14.52
2	59.96	17	57.38	32	50.88	47	40.92	62	28.17	77	13.50
3	59.92	18	57.06	33	50.32	48	40.15	63	27.24	78	12.47
4	59.85	19	56.73	34	49.74	49	39.36	64	26.30	79	11.45
5	59.77	20	56.38	35	49.15	50	38.57	65	25.36	80	10.42
6	59.67	21	56.01	36	48.54	51	37.76	66	24.40	81	9.39
7	59.55	22	55.63	37	47.92	52	36.94	67	23.44	82	8.35
8	59.42	23	55.23	38	47.28	53	36.11	68	22.48	83	7.31
9	59.26	24	54.81	39	46.63	54	35.27	69	21.50	84	6.27
10	59.08	25	54.38	40	45.96	55	34.41	70	20.52	85	5.23
11	58.89	26	53.93	41	45.28	56	33.55	71	19.53	86	4.19
12	58.68	27	53.46	42	44.59	57	32.68	72	18.54	87	3.14
13	58.46	28	52.97	43	43.88	58	31.80	73	17.54	88	2.09
14	58.22	29	52.47	44	43.16	59	30.90	74	16.54	89	1.05
15	57.95	30	51.96	45	42.43	60	30.00	75	15.53	90	0.00

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 1—100					Log. 1.00000—2.00000				
No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.
1	0.00000	21	1.32222	41	1.61278	61	1.78533	81	1.9 849
2	0.30103	22	1.34242	42	1.62325	62	1.79239	82	1.91381
3	0.47712	23	1.36173	43	1.63347	63	1.79934	83	1.91908
4	0.60206	24	1.38021	44	1.64345	64	1.80618	84	1.92428
5	0.69897	25	1.39794	45	1.65321	65	1.81291	85	1.92942
6	0.77815	26	1.41497	46	1.66276	66	1.81954	86	1.93450
7	0.84510	27	1.43136	47	1.67210	67	1.82607	87	1.93952
8	0.90309	28	1.44716	48	1.68124	68	1.83251	88	1.94448
9	0.95424	29	1.46240	49	1.69020	69	1.83885	89	1.94939
10	1.00000	30	1.47712	50	1.69897	70	1.84510	90	1.95424
11	1.04139	31	1.49136	51	1.70757	71	1.85126	91	1.95904
12	1.07918	32	1.50515	52	1.71600	72	1.85733	92	1.96379
13	1.11394	33	1.51851	53	1.72428	73	1.86332	93	1.96848
14	1.14613	34	1.53148	54	1.73239	74	1.86923	94	1.97313
15	1.17609	35	1.54407	55	1.74036	75	1.87506	95	1.97772
16	1.20412	36	1.55630	56	1.74819	76	1.88081	96	1.98227
17	1.23045	37	1.56820	57	1.75587	77	1.88649	97	1.98677
18	1.25527	38	1.57978	58	1.76343	78	1.89209	98	1.99123
19	1.27875	39	1.59106	59	1.77085	79	1.89763	99	1.99564
20	1.30103	40	1.60206	60	1.77815	80	1.90309	100	2.00000

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 100—1600					Log. 00000—20412					
No.	0	1	2	3	4	5	6	7	8	9
100	00000	00043	00087	00130	00173	00217	00260	00303	00346	00389
101	00432	00475	00518	00561	00604	00647	00689	00732	00775	00817
102	00860	00903	00945	00988	01030	01072	01115	01157	01199	01242
103	01284	01326	01368	01410	01452	01494	01536	01578	01620	01662
104	01703	01745	01787	01828	01870	01912	01953	01995	02036	02078
105	02119	02160	02202	02243	02284	02325	02366	02407	02449	02490
106	02531	02572	02612	02653	02694	02735	02776	02816	02857	02898
107	02938	02979	03019	03060	03100	03141	03181	03222	03262	03302
108	03342	03383	03423	03463	03503	03543	03583	03623	03663	03703
109	03743	03782	03822	03862	03902	03941	03981	04021	04060	04100
110	04139	04179	04218	04258	04297	04336	04376	04415	04454	04493
111	04532	04571	04610	04650	04689	04727	04766	04805	04844	04883
112	04922	04961	04999	05038	05077	05115	05154	05192	05231	05269
113	05308	05346	05385	05423	05461	05500	05538	05576	05614	05652
114	05690	05729	05767	05805	05843	05881	05918	05956	05994	06032
115	06070	06108	06145	06183	06221	06258	06296	06333	06371	06408
116	06446	06483	06521	06558	06595	06633	06670	06707	06744	06781
117	06819	06856	06893	06930	06967	07004	07041	07078	07115	07151
118	07188	07225	07262	07298	07335	07372	07408	07445	07482	07518
119	07555	07591	07628	07664	07700	07737	07773	07809	07846	07882
120	07918	07954	07990	08027	08063	08099	08135	08171	08207	08243
121	08279	08314	08350	08386	08422	08458	08493	08529	08565	08600
122	08636	08672	08707	08743	08778	08814	08849	08884	08920	08955
123	08991	09026	09061	09096	09132	09167	09202	09237	09272	09307
124	09342	09377	09412	09447	09482	09517	09552	09587	09621	09656
125	09691	09726	09760	09795	09830	09864	09899	09934	09968	10003
126	10037	10072	10106	10140	10175	10209	10243	10278	10312	10346
127	10380	10415	10449	10483	10517	10551	10585	10619	10653	10687
128	10721	10755	10789	10823	10857	10890	10924	10958	10992	11025
129	11059	11093	11126	11160	11193	11227	11261	11294	11327	11361
130	11394	11428	11461	11494	11528	11561	11594	11628	11661	11694
131	11727	11760	11793	11826	11860	11893	11926	11959	11992	12024
132	12057	12090	12123	12156	12189	12222	12254	12287	12320	12352
133	12385	12418	12450	12483	12516	12548	12581	12613	12646	12678
134	12710	12743	12775	12808	12840	12872	12905	12937	12969	13001
135	13033	13066	13098	13130	13162	13194	13226	13258	13290	13322
136	13354	13386	13418	13450	13481	13513	13545	13577	13609	13640
137	13672	13704	13735	13767	13799	13830	13862	13893	13925	13956
138	13988	14019	14051	14082	14114	14145	14176	14208	14239	14270
139	14301	14333	14364	14395	14426	14457	14489	14520	14551	14582
140	14613	14644	14675	14706	14737	14768	14799	14829	14860	14891
141	14922	14953	14983	15014	15045	15076	15106	15137	15168	15198
142	15229	15259	15290	15320	15351	15381	15412	15442	15473	15503
143	15534	15564	15594	15625	15655	15685	15715	15746	15776	15806
144	15836	15866	15897	15927	15957	15987	16017	16047	16077	16107
145	16137	16167	16197	16227	16256	16286	16316	16346	16376	16406
146	16435	16465	16495	16524	16554	16584	16613	16643	16673	16702
147	16732	16761	16791	16820	16850	16879	16909	16938	16967	16997
148	17026	17056	17085	17114	17143	17173	17202	17231	17260	17289
149	17319	17348	17377	17406	17435	17464	17493	17522	17551	17580
150	17609	17638	17667	17696	17725	17754	17782	17811	17840	17869
151	17898	17926	17955	17984	18013	18041	18070	18099	18127	18156
152	18184	18213	18241	18270	18298	18327	18355	18384	18412	18441
153	18469	18498	18526	18554	18583	18611	18639	18667	18696	18724
154	18752	18780	18808	18837	18865	18893	18921	18949	18977	19005
155	19033	19061	19089	19117	19145	19173	19201	19229	19257	19285
156	19312	19340	19368	19396	19424	19451	19479	19507	19535	19562
157	19590	19618	19645	19673	19700	19728	19756	19783	19811	19838
158	19866	19893	19921	19948	19976	20003	20030	20058	20085	20112
159	20140	20167	20194	20222	20249	20276	20303	20330	20358	20385

TABLE VIII. LOGARITHMS OF NUMBERS.

18

No. 1600—2200						Log. 20412—34242				
No.	0	1	2	3	4	5	6	7	8	9
160	20412	20439	20466	20493	20520	20548	20575	20602	20629	20656
161	20683	20710	20737	20763	20790	20817	20844	20871	20898	20925
162	20952	20978	21005	21032	21059	21085	21112	21139	21165	21192
163	21219	21245	21272	21299	21325	21352	21378	21405	21431	21458
164	21484	21511	21537	21564	21590	21617	21643	21669	21696	21722
165	21748	21775	21801	21827	21854	21880	21906	21932	21958	21985
166	22011	22037	22063	22089	22115	22141	22167	22194	22220	22246
167	22272	22298	22324	22350	22376	22401	22427	22453	22479	22505
168	22531	22557	22583	22608	22634	22660	22686	22712	22737	22763
169	22789	22814	22840	22866	22891	22917	22943	22968	22994	23019
170	23045	23070	23096	23121	23147	23172	23198	23223	23249	23274
171	23300	23325	23350	23376	23401	23426	23452	23477	23502	23528
172	23553	23578	23603	23629	23654	23679	23704	23729	23754	23779
173	23805	23830	23855	23880	23905	23930	23955	23980	24005	24030
174	24055	24080	24105	24130	24155	24180	24204	24229	24254	24279
175	24304	24329	24353	24378	24403	24428	24452	24477	24502	24527
176	24551	24576	24601	24625	24650	24674	24699	24724	24748	24773
177	24797	24822	24846	24871	24895	24920	24944	24969	24993	25018
178	25043	25066	25091	25115	25139	25164	25188	25212	25237	25261
179	25285	25310	25334	25358	25382	25406	25431	25455	25479	25503
180	25527	25551	25575	25600	25624	25648	25672	25696	25720	25744
181	25768	25792	25816	25840	25864	25888	25912	25935	25959	25983
182	26007	26031	26055	26079	26102	26126	26150	26174	26198	26221
183	26245	26269	26293	26316	26340	26364	26387	26411	26435	26458
184	26482	26505	26529	26553	26576	26600	26623	26647	26670	26694
185	26717	26741	26764	26788	26811	26834	26858	26881	26905	26928
186	26951	26975	26998	27021	27045	27068	27091	27114	27138	27161
187	27184	27207	27231	27254	27277	27300	27323	27346	27370	27393
188	27416	27439	27462	27485	27508	27531	27554	27577	27600	27623
189	27646	27669	27692	27715	27738	27761	27784	27807	27830	27853
190	27875	27898	27921	27944	27967	27989	28012	28035	28058	28081
191	28103	28126	28149	28171	28194	28217	28240	28262	28285	28307
192	28330	28353	28375	28398	28421	28443	28466	28488	28511	28533
193	28556	28578	28601	28623	28646	28668	28691	28713	28735	28758
194	28780	28803	28825	28847	28870	28892	28914	28937	28959	28981
195	29003	29026	29048	29070	29092	29115	29137	29159	29181	29203
196	29226	29248	29270	29292	29314	29336	29358	29380	29402	29424
197	29447	29469	29491	29513	29535	29557	29579	29601	29623	29645
198	29667	29688	29710	29732	29754	29776	29798	29820	29842	29863
199	29885	29907	29929	29951	29973	29994	30016	30038	30060	30081
200	30103	30125	30146	30168	30190	30211	30233	30255	30276	30298
201	30320	30341	30363	30384	30406	30428	30449	30471	30492	30514
202	30535	30557	30578	30600	30621	30643	30664	30685	30707	30728
203	30750	30771	30792	30814	30835	30856	30878	30899	30920	30942
204	30963	30984	31006	31027	31048	31069	31091	31112	31133	31154
205	31175	31197	31218	31239	31260	31281	31302	31323	31344	31366
206	31387	31408	31429	31450	31471	31492	31513	31534	31555	31576
207	31597	31618	31639	31660	31681	31702	31723	31744	31765	31785
208	31806	31827	31848	31869	31890	31911	31931	31952	31973	31994
209	32015	32035	32056	32077	32098	32118	32139	32160	32181	32201
210	32222	32243	32263	32284	32305	32325	32346	32366	32387	32408
211	32428	32449	32469	32490	32510	32531	32552	32572	32593	32613
212	32634	32654	32675	32695	32715	32736	32756	32777	32797	32818
213	32838	32858	32879	32899	32919	32940	32960	32980	33001	33021
214	33041	33062	33082	33102	33122	33143	33163	33183	33203	33224
215	33244	33264	33284	33304	33325	33345	33365	33385	33405	33425
216	33445	33465	33486	33506	33526	33546	33566	33586	33606	33626
217	33646	33666	33686	33706	33726	33746	33766	33786	33806	33826
218	33846	33866	33886	33905	33925	33945	33965	33985	34005	34025
219	34044	34064	34084	34104	34124	34143	34163	34183	34203	34223
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 2200—2800					Log. 34242—44716					
No.	0	1	2	3	4	5	6	7	8	9
220	34242	34262	34282	34301	34321	34341	34361	34380	34400	34420
221	34439	34459	34479	34498	34518	34537	34557	34577	34596	34616
222	34635	34655	34674	34694	34713	34733	34753	34772	34792	34811
223	34830	34850	34869	34889	34908	34928	34947	34967	34986	35005
224	35025	35044	35064	35083	35102	35122	35141	35160	35180	35199
225	35218	35238	35257	35276	35295	35315	35334	35353	35372	35392
226	35411	35430	35449	35468	35488	35507	35526	35545	35564	35583
227	35603	35622	35641	35660	35679	35698	35717	35736	35755	35774
228	35793	35813	35832	35851	35870	35889	35908	35927	35946	35965
229	35984	36003	36021	36040	36059	36078	36097	36116	36135	36154
230	36173	36192	36211	36229	36248	36267	36286	36305	36324	36342
231	36361	36380	36399	36418	36436	36455	36474	36493	36511	36530
232	36549	36568	36586	36605	36624	36642	36661	36680	36698	36717
233	36736	36754	36773	36791	36810	36829	36847	36866	36884	36903
234	36922	36940	36959	36977	36996	37014	37033	37051	37070	37088
235	37107	37125	37144	37162	37181	37199	37218	37236	37254	37273
236	37291	37310	37328	37346	37365	37383	37401	37420	37438	37457
237	37475	37493	37511	37530	37548	37566	37585	37603	37621	37639
238	37658	37676	37694	37712	37731	37749	37767	37785	37803	37822
239	37840	37858	37876	37894	37912	37931	37949	37967	37985	38003
240	38021	38039	38057	38075	38093	38112	38130	38148	38166	38184
241	38202	38220	38238	38256	38274	38292	38310	38328	38346	38364
242	38382	38399	38417	38435	38453	38471	38489	38507	38525	38543
243	38561	38578	38596	38614	38632	38650	38668	38686	38703	38721
244	38739	38757	38775	38792	38810	38828	38846	38863	38881	38899
245	38917	38934	38952	38970	38987	39005	39023	39041	39058	39076
246	39094	39111	39129	39146	39164	39182	39199	39217	39235	39252
247	39270	39287	39305	39322	39340	39358	39375	39393	39410	39428
248	39445	39463	39480	39498	39515	39533	39550	39568	39585	39602
249	39620	39637	39655	39672	39690	39707	39724	39742	39759	39777
250	39794	39811	39829	39846	39863	39881	39898	39915	39933	39950
251	39967	39985	40002	40019	40037	40054	40071	40088	40106	40123
252	40140	40157	40175	40192	40209	40226	40243	40261	40278	40295
253	40312	40329	40346	40364	40381	40398	40415	40432	40449	40466
254	40483	40500	40518	40535	40552	40569	40586	40603	40620	40637
255	40654	40671	40688	40705	40722	40739	40756	40773	40790	40807
256	40824	40841	40858	40875	40892	40909	40926	40943	40960	40976
257	40993	41010	41027	41044	41061	41078	41095	41111	41128	41145
258	41162	41179	41196	41212	41229	41246	41263	41280	41296	41313
259	41330	41347	41363	41380	41397	41414	41430	41447	41464	41481
260	41497	41514	41531	41547	41564	41581	41597	41614	41631	41647
261	41664	41681	41697	41714	41731	41747	41764	41780	41797	41814
262	41830	41847	41863	41880	41896	41913	41929	41946	41963	41979
263	41996	42012	42029	42045	42062	42078	42095	42111	42127	42144
264	42160	42177	42193	42210	42226	42243	42259	42275	42292	42308
265	42325	42341	42357	42374	42390	42406	42423	42439	42455	42472
266	42488	42504	42521	42537	42553	42570	42586	42602	42619	42635
267	42651	42667	42684	42700	42716	42732	42749	42765	42781	42797
268	42813	42830	42846	42862	42878	42894	42911	42927	42943	42959
269	42975	42991	43008	43024	43040	43056	43072	43088	43104	43120
270	43136	43152	43169	43185	43201	43217	43233	43249	43265	43281
271	43297	43313	43329	43345	43361	43377	43393	43409	43425	43441
272	43457	43473	43489	43505	43521	43537	43553	43569	43584	43600
273	43616	43632	43648	43664	43680	43696	43712	43727	43743	43759
274	43775	43791	43807	43823	43838	43854	43870	43886	43902	43917
275	43933	43949	43965	43981	43996	44012	44028	44044	44059	44075
276	44091	44107	44122	44138	44154	44170	44185	44201	44217	44232
277	44248	44264	44279	44295	44311	44326	44342	44358	44373	44389
278	44404	44420	44436	44451	44467	44483	44498	44514	44529	44545
279	44560	44576	44592	44607	44623	44638	44654	44669	44685	44700
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.
LOGARITHMS OF NUMBERS.

21

No. 2800—3400				Log. 44716—53148						
No.	0	1	2	3	4	5	6	7	8	9
280	44716	44731	44747	44762	44778	44793	44809	44824	44840	44855
281	44871	44886	44902	44917	44932	44948	44963	44979	44994	45010
282	45025	45040	45056	45071	45086	45102	45117	45133	45148	45163
283	45179	45194	45209	45225	45240	45255	45271	45286	45301	45317
284	45332	45347	45362	45378	45393	45408	45423	45439	45454	45469
285	45484	45500	45515	45530	45545	45561	45576	45591	45606	45621
286	45637	45652	45667	45682	45697	45712	45728	45743	45758	45773
287	45788	45803	45818	45834	45849	45864	45879	45894	45909	45924
288	45939	45954	45969	45984	46000	46015	46030	46045	46060	46075
289	46090	46105	46120	46135	46150	46165	46180	46195	46210	46225
290	46240	46255	46270	46285	46300	46315	46330	46345	46359	46374
291	46389	46404	46419	46434	46449	46464	46479	46494	46509	46523
292	46538	46553	46568	46583	46598	46613	46627	46642	46657	46672
293	46687	46702	46716	46731	46746	46761	46776	46790	46805	46820
294	46835	46850	46864	46879	46894	46909	46923	46938	46953	46967
295	46982	46997	47012	47026	47041	47056	47070	47085	47100	47114
296	47129	47144	47159	47173	47188	47202	47217	47232	47246	47261
297	47276	47290	47305	47319	47334	47349	47363	47378	47392	47407
298	47422	47436	47451	47465	47480	47494	47509	47524	47538	47553
299	47567	47582	47596	47611	47625	47640	47654	47669	47683	47698
300	47712	47727	47741	47756	47770	47784	47799	47813	47828	47842
301	47857	47871	47885	47900	47914	47929	47943	47958	47972	47986
302	48001	48015	48029	48044	48058	48073	48087	48101	48116	48130
303	48144	48159	48173	48187	48202	48216	48230	48244	48259	48273
304	48287	48302	48316	48330	48344	48359	48373	48387	48401	48416
305	48430	48444	48458	48473	48487	48501	48515	48530	48544	48558
306	48572	48586	48601	48615	48629	48643	48657	48671	48686	48700
307	48714	48728	48742	48756	48770	48785	48799	48813	48827	48841
308	48855	48869	48883	48897	48911	48926	48940	48954	48968	48982
309	48996	49010	49024	49038	49052	49066	49080	49094	49108	49122
310	49136	49150	49164	49178	49192	49206	49220	49234	49248	49262
311	49276	49290	49304	49318	49332	49346	49360	49374	49388	49402
312	49415	49429	49443	49457	49471	49485	49499	49513	49527	49541
313	49554	49568	49582	49596	49610	49624	49638	49652	49666	49679
314	49693	49707	49721	49734	49748	49762	49776	49790	49803	49817
315	49831	49845	49859	49872	49886	49900	49914	49927	49941	49955
316	49969	49982	49996	50010	50024	50037	50051	50065	50079	50092
317	50106	50120	50133	50147	50161	50174	50188	50202	50215	50229
318	50243	50256	50270	50284	50297	50311	50325	50338	50352	50365
319	50379	50393	50406	50420	50433	50447	50461	50474	50488	50501
320	50515	50529	50542	50556	50569	50583	50596	50610	50623	50637
321	50651	50664	50678	50691	50705	50718	50732	50745	50759	50772
322	50786	50799	50813	50826	50840	50853	50866	50880	50893	50907
323	50920	50934	50947	50961	50974	50987	51001	51014	51028	51041
324	51055	51068	51081	51095	51108	51121	51135	51148	51162	51175
325	51188	51202	51215	51228	51242	51255	51268	51282	51295	51308
326	51322	51335	51348	51362	51375	51388	51402	51415	51428	51441
327	51455	51468	51481	51495	51508	51521	51534	51548	51561	51574
328	51587	51601	51614	51627	51640	51654	51667	51680	51693	51706
329	51720	51733	51746	51759	51772	51786	51799	51812	51825	51838
330	51851	51865	51878	51891	51904	51917	51930	51943	51957	51970
331	51983	51996	52009	52022	52035	52048	52061	52075	52088	52101
332	52114	52127	52140	52153	52166	52179	52192	52205	52218	52231
333	52244	52257	52270	52284	52297	52310	52323	52336	52349	52362
334	52375	52388	52401	52414	52427	52440	52453	52466	52479	52492
335	52504	52517	52530	52543	52556	52569	52582	52595	52608	52621
336	52634	52647	52660	52673	52686	52699	52711	52724	52737	52750
337	52763	52776	52789	52802	52815	52827	52840	52853	52866	52879
338	52892	52905	52917	52930	52943	52956	52969	52982	52994	53007
339	53020	53033	53046	53058	53071	53084	53097	53110	53122	53135

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 8400—4000				Log. 53148—60206						
No.	0	1	2	3	4	5	6	7	8	9
340	53148	53161	53173	53186	53199	53212	53224	53237	53250	53263
341	53275	53288	53301	53314	53326	53339	53352	53364	53377	53390
342	53403	53415	53428	53441	53453	53466	53479	53491	53504	53517
343	53529	53542	53555	53567	53580	53593	53605	53618	53631	53643
344	53656	53668	53681	53694	53706	53719	53732	53744	53757	53769
345	53782	53794	53807	53820	53832	53845	53857	53870	53882	53895
346	53908	53920	53933	53945	53958	53970	53983	53995	54008	54020
347	54033	54045	54058	54070	54083	54095	54108	54120	54133	54145
348	54158	54170	54183	54195	54208	54220	54233	54245	54258	54270
349	54283	54295	54307	54320	54332	54345	54357	54370	54382	54394
350	54407	54419	54432	54444	54456	54469	54481	54494	54506	54518
351	54531	54543	54555	54568	54580	54593	54605	54617	54630	54642
352	54654	54667	54679	54691	54704	54716	54728	54741	54753	54765
353	54777	54790	54802	54814	54827	54839	54851	54864	54876	54888
354	54900	54913	54925	54937	54949	54962	54974	54986	54998	55011
355	55023	55035	55047	55060	55072	55084	55096	55108	55121	55133
356	55145	55157	55169	55182	55194	55206	55218	55230	55242	55255
357	55267	55279	55291	55303	55315	55328	55340	55352	55364	55376
358	55388	55400	55413	55425	55437	55449	55461	55473	55485	55497
359	55509	55522	55534	55546	55558	55570	55582	55594	55606	55618
360	55630	55642	55654	55666	55678	55691	55703	55715	55727	55739
361	55751	55763	55775	55787	55799	55811	55823	55835	55847	55859
362	55871	55883	55895	55907	55919	55931	55943	55955	55967	55979
363	55991	56003	56015	56027	56039	56050	56062	56074	56086	56098
364	56110	56122	56134	56146	56158	56170	56182	56194	56206	56218
365	56229	56241	56253	56265	56277	56289	56301	56312	56324	56336
366	56348	56360	56372	56384	56396	56407	56419	56431	56443	56455
367	56467	56478	56490	56502	56514	56526	56538	56549	56561	56573
368	56585	56597	56608	56620	56632	56644	56656	56667	56679	56691
369	56703	56714	56726	56738	56750	56761	56773	56785	56797	56808
370	56820	56832	56844	56855	56867	56879	56891	56902	56914	56926
371	56937	56949	56961	56972	56984	56996	57008	57019	57031	57043
372	57054	57066	57078	57089	57101	57113	57124	57136	57148	57159
373	57171	57183	57194	57206	57217	57229	57241	57252	57264	57276
374	57287	57299	57310	57322	57334	57345	57357	57368	57380	57392
375	57408	57419	57426	57438	57449	57461	57473	57484	57496	57507
376	57519	57530	57542	57553	57565	57576	57588	57600	57611	57623
377	57634	57645	57657	57669	57680	57692	57703	57715	57726	57738
378	57749	57761	57772	57784	57795	57807	57818	57830	57841	57852
379	57864	57875	57887	57898	57910	57921	57933	57944	57955	57967
380	57978	57990	58001	58013	58024	58035	58047	58058	58070	58081
381	58092	58104	58115	58127	58138	58149	58161	58172	58184	58195
382	58206	58218	58229	58240	58252	58263	58274	58286	58297	58308
383	58320	58331	58343	58354	58365	58377	58388	58399	58410	58422
384	58433	58444	58456	58467	58478	58490	58501	58512	58524	58535
385	58546	58557	58569	58580	58591	58602	58614	58625	58636	58647
386	58659	58670	58681	58692	58704	58715	58726	58737	58749	58760
387	58771	58782	58794	58805	58816	58827	58838	58850	58861	58872
388	58883	58894	58906	58917	58928	58939	58950	58961	58973	58984
389	58995	59006	59017	59028	59040	59051	59062	59073	59084	59095
390	59106	59118	59129	59140	59151	59162	59173	59184	59195	59207
391	59218	59229	59240	59251	59262	59273	59284	59295	59306	59318
392	59329	59340	59351	59362	59373	59384	59395	59406	59417	59428
393	59439	59450	59461	59472	59483	59494	59506	59517	59528	59539
394	59550	59561	59572	59583	59594	59605	59616	59627	59638	59649
395	59660	59671	59682	59693	59704	59715	59726	59737	59748	59759
396	59770	59780	59791	59802	59813	59824	59835	59846	59857	59868
397	59879	59890	59901	59912	59923	59934	59945	59956	59966	59977
398	59988	59999	60010	60021	60032	60043	60054	60065	60076	60086
399	60097	60108	60119	60130	60141	60152	60163	60173	60184	60195
	0	1	2	3	4	5	6	7	8	9

TABLE VIII. LOGARITHMS OF NUMBERS.

23

No. 4000—4600						Log. 60206—66276				
No.	0	1	2	3	4	5	6	7	8	9
400	60206	60217	60228	60239	60249	60260	60271	60282	60293	60304
401	60314	60325	60336	60347	60358	60369	60379	60390	60401	60412
402	60423	60433	60444	60455	60466	60477	60487	60498	60509	60520
403	60531	60541	60552	60563	60574	60584	60595	60606	60617	60627
404	60638	60649	60660	60670	60681	60692	60703	60713	60724	60735
405	60746	60756	60767	60778	60788	60799	60810	60821	60831	60842
406	60853	60863	60874	60885	60895	60906	60917	60927	60938	60949
407	60959	60970	60981	60991	61002	61013	61023	61034	61045	61055
408	61066	61077	61087	61098	61109	61119	61130	61140	61151	61162
409	61172	61183	61194	61204	61215	61225	61236	61247	61257	61268
410	61278	61289	61300	61310	61321	61331	61342	61352	61363	61374
411	61384	61395	61405	61416	61426	61437	61448	61458	61469	61479
412	61490	61500	61511	61521	61532	61542	61553	61563	61574	61584
413	61595	61606	61616	61627	61637	61648	61658	61669	61679	61690
414	61700	61711	61721	61731	61742	61752	61763	61773	61784	61794
415	61805	61815	61826	61836	61847	61857	61868	61878	61888	61899
416	61909	61920	61930	61941	61951	61962	61972	61982	61993	62003
417	62014	62024	62034	62045	62055	62066	62076	62086	62097	62107
418	62118	62128	62138	62149	62159	62170	62180	62190	62201	62211
419	62221	62232	62242	62252	62263	62273	62284	62294	62304	62315
420	62325	62335	62346	62356	62366	62377	62387	62397	62408	62418
421	62428	62439	62449	62459	62469	62480	62490	62500	62511	62521
422	62531	62542	62552	62562	62572	62583	62593	62603	62613	62624
423	62634	62644	62655	62665	62675	62685	62696	62706	62716	62726
424	62737	62747	62757	62767	62778	62788	62798	62808	62818	62828
425	62839	62849	62859	62870	62880	62890	62900	62910	62921	62931
426	62941	62951	62961	62972	62982	62992	63002	63012	63022	63033
427	63043	63053	63063	63073	63083	63094	63104	63114	63124	63134
428	63144	63155	63165	63175	63185	63195	63205	63215	63225	63236
429	63246	63256	63266	63276	63286	63296	63306	63317	63327	63337
430	63347	63357	63367	63377	63387	63397	63407	63417	63428	63438
431	63448	63458	63468	63478	63488	63498	63508	63518	63528	63538
432	63548	63558	63568	63579	63589	63599	63609	63619	63629	63639
433	63649	63659	63669	63679	63689	63699	63709	63719	63729	63739
434	63749	63759	63769	63779	63789	63799	63809	63819	63829	63839
435	63849	63859	63869	63879	63889	63899	63909	63919	63929	63939
436	63949	63959	63969	63979	63988	63998	64008	64018	64028	64038
437	64048	64058	64068	64078	64088	64098	64108	64118	64128	64137
438	64147	64157	64167	64177	64187	64197	64207	64217	64227	64237
439	64246	64256	64266	64276	64286	64296	64306	64316	64326	64335
440	64345	64355	64365	64375	64385	64395	64404	64414	64424	64434
441	64444	64454	64464	64473	64483	64493	64503	64513	64523	64532
442	64542	64552	64562	64572	64582	64591	64601	64611	64621	64631
443	64640	64650	64660	64670	64680	64689	64699	64709	64719	64729
444	64738	64748	64758	64768	64777	64787	64797	64807	64816	64826
445	64836	64846	64856	64865	64875	64885	64895	64904	64914	64924
446	64933	64943	64953	64963	64972	64982	64992	65002	65011	65021
447	65031	65040	65050	65060	65070	65079	65089	65099	65108	65118
448	65128	65137	65147	65157	65167	65176	65186	65196	65205	65215
449	65225	65234	65244	65254	65263	65273	65283	65292	65302	65312
450	65321	65331	65341	65350	65360	65369	65379	65389	65398	65408
451	65418	65427	65437	65447	65456	65466	65475	65485	65495	65504
452	65514	65523	65533	65543	65552	65562	65571	65581	65591	65600
453	65610	65619	65629	65639	65648	65658	65667	65677	65686	65696
454	65706	65715	65725	65734	65744	65753	65763	65772	65782	65792
455	65801	65811	65820	65830	65839	65849	65858	65868	65877	65887
456	65896	65906	65916	65925	65935	65944	65954	65963	65973	65982
457	65992	66001	66011	66020	66030	66039	66049	66058	66068	66077
458	66187	66196	66206	66215	66224	66234	66243	66253	66262	66272
459	66181	66191	66200	66210	66219	66229	66238	66247	66257	66266

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 4600—5200					Log. 66276—71600					
No.	0	1	2	3	4	5	6	7	8	9
460	66276	66285	66295	66304	66314	66323	66332	66342	66351	66361
461	66370	66380	66389	66398	66408	66417	66427	66436	66445	66455
462	66464	66474	66483	66492	66502	66511	66521	66530	66539	66549
463	66558	66567	66577	66586	66596	66605	66614	66624	66633	66642
464	66652	66661	66671	66680	66689	66699	66708	66717	66727	66736
465	66745	66755	66764	66773	66783	66792	66801	66811	66820	66829
466	66839	66848	66857	66867	66876	66885	66894	66904	66913	66922
467	66932	66941	66950	66960	66969	66978	66987	66997	67006	67015
468	67025	67034	67043	67052	67062	67071	67080	67089	67099	67108
469	67117	67127	67136	67145	67154	67164	67173	67182	67191	67201
470	67210	67219	67228	67237	67247	67256	67265	67274	67284	67293
471	67302	67311	67321	67330	67339	67348	67357	67367	67376	67385
472	67394	67403	67413	67422	67431	67440	67449	67459	67468	67477
473	67486	67495	67504	67514	67523	67532	67541	67550	67560	67569
474	67578	67587	67596	67605	67614	67624	67633	67642	67651	67660
475	67669	67679	67688	67697	67706	67715	67724	67733	67742	67752
476	67761	67770	67779	67788	67797	67806	67815	67825	67834	67843
477	67852	67861	67870	67879	67888	67897	67906	67916	67925	67934
478	67943	67952	67961	67970	67979	67988	67997	68006	68015	68024
479	68034	68043	68052	68061	68070	68079	68088	68097	68106	68115
480	68124	68133	68142	68151	68160	68169	68178	68187	68196	68205
481	68215	68224	68233	68242	68251	68260	68269	68278	68287	68296
482	68305	68314	68323	68332	68341	68350	68359	68368	68377	68386
483	68395	68404	68413	68422	68431	68440	68449	68458	68467	68476
484	68485	68494	68502	68511	68520	68529	68538	68547	68556	68565
485	68574	68583	68592	68601	68610	68619	68628	68637	68646	68655
486	68664	68673	68681	68690	68699	68708	68717	68726	68735	68744
487	68753	68762	68771	68780	68789	68797	68806	68815	68824	68833
488	68842	68851	68860	68869	68878	68886	68895	68904	68913	68922
489	68931	68940	68949	68958	68966	68975	68984	68993	69002	69011
490	69020	69028	69037	69046	69055	69064	69073	69082	69090	69099
491	69108	69117	69126	69135	69144	69152	69161	69170	69179	69188
492	69197	69205	69214	69223	69232	69241	69249	69258	69267	69276
493	69285	69294	69302	69311	69320	69329	69338	69346	69355	69364
494	69373	69381	69390	69399	69408	69417	69425	69434	69443	69452
495	69461	69469	69478	69487	69496	69504	69513	69522	69531	69539
496	69548	69557	69566	69574	69583	69592	69601	69609	69618	69627
497	69636	69644	69653	69662	69671	69679	69688	69697	69705	69714
498	69723	69732	69740	69749	69758	69767	69775	69784	69793	69801
499	69810	69819	69827	69836	69845	69854	69862	69871	69880	69888
500	69897	69906	69914	69923	69932	69940	69949	69958	69966	69975
501	69984	69992	70001	70010	70018	70027	70036	70044	70053	70062
502	70070	70079	70088	70096	70105	70114	70122	70131	70140	70148
503	70157	70165	70174	70183	70191	70200	70209	70217	70226	70234
504	70243	70252	70260	70269	70278	70286	70295	70303	70312	70321
505	70329	70338	70346	70355	70364	70372	70381	70389	70398	70406
506	70415	70424	70432	70441	70449	70458	70467	70475	70484	70492
507	70501	70509	70518	70526	70535	70544	70552	70561	70569	70578
508	70586	70595	70603	70612	70621	70629	70638	70646	70655	70663
509	70672	70680	70689	70697	70706	70714	70723	70731	70740	70749
510	70757	70766	70774	70783	70791	70800	70808	70817	70825	70834
511	70842	70851	70859	70868	70876	70885	70893	70902	70910	70919
512	70927	70935	70944	70952	70961	70969	70978	70986	70995	71003
513	71012	71020	71029	71037	71046	71054	71063	71071	71079	71088
514	71096	71105	71113	71122	71130	71139	71147	71155	71164	71173
515	71181	71189	71198	71206	71214	71223	71231	71240	71248	71257
516	71265	71273	71282	71290	71299	71307	71315	71324	71332	71341
517	71349	71357	71366	71374	71383	71391	71399	71408	71416	71425
518	71433	71441	71450	71458	71466	71475	71483	71492	71500	71508
519	71517	71525	71533	71542	71550	71559	71567	71575	71584	71593

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No. 5200—5800.					Log. 71600—76345.					
No.	0	1	2	3	4	5	6	7	8	9
520	71600	71609	71617	71625	71634	71642	71650	71659	71667	71675
521	71684	71692	71700	71709	71717	71725	71734	71742	71750	71759
522	71767	71775	71784	71792	71800	71809	71817	71825	71834	71842
523	71850	71858	71867	71875	71883	71892	71900	71908	71917	71925
524	71938	71941	71950	71958	71966	71975	71983	71991	71999	72008
525	72016	72024	72032	72041	72049	72057	72066	72074	72082	72090
526	72099	72107	72115	72123	72132	72140	72148	72156	72165	72173
527	72181	72189	72198	72206	72214	72222	72230	72239	72247	72255
528	72263	72272	72280	72288	72296	72304	72313	72321	72329	72337
529	72346	72354	72362	72370	72378	72387	72395	72403	72411	72419
530	72428	72436	72444	72452	72460	72469	72477	72485	72493	72501
531	72509	72518	72526	72534	72542	72550	72558	72567	72575	72583
532	72591	72599	72607	72616	72624	72632	72640	72648	72656	72665
533	72673	72681	72689	72697	72705	72713	72722	72730	72738	72746
534	72754	72762	72770	72779	72787	72795	72803	72811	72819	72827
535	72835	72843	72852	72860	72868	72876	72884	72892	72900	72908
536	72916	72925	72933	72941	72949	72957	72965	72973	72981	72989
537	72997	73006	73014	73022	73030	73038	73046	73054	73062	73070
538	73078	73086	73094	73102	73111	73119	73127	73135	73143	73151
539	73159	73167	73175	73183	73191	73199	73207	73215	73223	73231
540	73239	73247	73255	73263	73272	73280	73288	73296	73304	73312
541	73320	73328	73336	73344	73352	73360	73368	73376	73384	73392
542	73400	73408	73416	73424	73432	73440	73448	73456	73464	73472
543	73480	73488	73496	73504	73512	73520	73528	73536	73544	73552
544	73560	73568	73576	73584	73592	73600	73608	73616	73624	73632
545	73640	73648	73656	73664	73672	73679	73687	73695	73703	73711
546	73719	73727	73735	73743	73751	73759	73767	73775	73783	73791
547	73799	73807	73815	73823	73830	73838	73846	73854	73862	73870
548	73878	73886	73894	73902	73910	73918	73926	73933	73941	73949
549	73957	73965	73973	73981	73989	73997	74005	74013	74020	74028
550	74036	74044	74052	74060	74068	74076	74084	74092	74099	74107
551	74115	74123	74131	74139	74147	74155	74162	74170	74178	74186
552	74194	74202	74210	74218	74225	74233	74241	74249	74257	74265
553	74273	74280	74288	74296	74304	74312	74320	74327	74335	74343
554	74351	74359	74367	74374	74382	74390	74398	74406	74414	74421
555	74429	74437	74445	74453	74461	74468	74476	74484	74492	74500
556	74507	74515	74523	74531	74539	74547	74554	74562	74570	74578
557	74586	74593	74601	74609	74617	74624	74632	74640	74648	74656
558	74663	74671	74679	74687	74695	74702	74710	74718	74726	74733
559	74741	74749	74757	74764	74772	74780	74788	74796	74803	74811
560	74819	74827	74834	74842	74850	74858	74865	74873	74881	74889
561	74896	74904	74912	74920	74927	74935	74943	74950	74958	74966
562	74974	74981	74989	74997	75005	75012	75020	75028	75035	75043
563	75051	75059	75066	75074	75082	75089	75097	75105	75113	75120
564	75128	75136	75143	75151	75159	75166	75174	75182	75189	75197
565	75205	75213	75220	75228	75236	75243	75251	75259	75266	75274
566	75282	75289	75297	75305	75312	75320	75328	75335	75343	75351
567	75358	75366	75374	75381	75389	75397	75404	75412	75420	75427
568	75435	75442	75450	75458	75465	75473	75481	75488	75496	75504
569	75511	75519	75526	75534	75542	75549	75557	75565	75572	75580
570	75587	75595	75603	75610	75618	75626	75633	75641	75648	75656
571	75664	75671	75679	75686	75694	75702	75709	75717	75724	75732
572	75740	75747	75755	75762	75770	75778	75785	75793	75800	75808
573	75815	75823	75831	75838	75846	75853	75861	75868	75876	75884
574	75891	75899	75906	75914	75921	75929	75937	75944	75952	75959
575	75967	75974	75982	75989	75997	76005	76012	76020	76027	76035
576	76042	76050	76057	76065	76072	76080	76087	76095	76103	76110
577	76118	76125	76133	76140	76148	76155	76163	76170	76178	76185
578	76193	76200	76208	76215	76223	76230	76238	76245	76253	76260
579	76268	76275	76283	76290	76298	76305	76313	76320	76328	76335
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 5800—6400					Log. 76343—80618					
No.	0	1	2	3	4	5	6	7	8	9
580	76343	76350	76358	76365	76373	76380	76388	76395	76403	76410
581	76418	76425	76433	76440	76448	76455	76462	76470	76477	76485
582	76492	76500	76507	76515	76522	76530	76537	76545	76552	76559
583	76567	76574	76582	76589	76597	76604	76612	76619	76626	76634
584	76641	76649	76656	76664	76671	76678	76686	76693	76701	76708
585	76716	76723	76730	76738	76745	76753	76760	76768	76775	76782
586	76790	76797	76805	76812	76819	76827	76834	76842	76849	76856
587	76864	76871	76879	76886	76893	76901	76908	76916	76923	76930
588	76938	76945	76953	76960	76967	76975	76982	76989	76997	77004
589	77012	77019	77026	77034	77041	77048	77056	77063	77070	77078
590	77085	77093	77100	77107	77115	77122	77129	77137	77144	77151
591	77159	77166	77173	77181	77188	77195	77203	77210	77217	77225
592	77232	77240	77247	77254	77262	77269	77276	77283	77291	77298
593	77305	77313	77320	77327	77335	77342	77349	77357	77364	77371
594	77379	77386	77393	77401	77408	77415	77422	77430	77437	77444
595	77452	77459	77466	77474	77481	77488	77495	77503	77510	77517
596	77525	77532	77539	77546	77554	77561	77568	77576	77583	77590
597	77597	77605	77612	77619	77627	77634	77641	77648	77656	77663
598	77670	77677	77685	77692	77699	77706	77714	77721	77728	77735
599	77743	77750	77757	77764	77772	77779	77786	77793	77801	77808
600	77815	77822	77830	77837	77844	77851	77859	77866	77873	77880
601	77887	77895	77902	77909	77916	77924	77931	77938	77945	77952
602	77960	77967	77974	77981	77988	77996	78003	78010	78017	78025
603	78032	78039	78046	78053	78061	78068	78075	78082	78089	78097
604	78104	78111	78118	78125	78132	78140	78147	78154	78161	78168
605	78176	78183	78190	78197	78204	78211	78219	78226	78233	78240
606	78247	78254	78262	78269	78276	78283	78290	78297	78305	78312
607	78319	78326	78333	78340	78347	78355	78362	78369	78376	78383
608	78390	78398	78405	78412	78419	78426	78433	78440	78447	78455
609	78462	78469	78476	78483	78490	78497	78504	78512	78519	78526
610	78533	78540	78547	78554	78561	78569	78576	78583	78590	78597
611	78604	78611	78618	78625	78633	78640	78647	78654	78661	78668
612	78675	78682	78689	78696	78704	78711	78718	78725	78732	78739
613	78746	78753	78760	78767	78774	78781	78789	78796	78803	78810
614	78817	78824	78831	78838	78845	78852	78859	78866	78873	78880
615	78888	78895	78902	78909	78916	78923	78930	78937	78944	78951
616	78958	78965	78972	78979	78986	78993	79000	79007	79014	79021
617	79029	79036	79043	79050	79057	79064	79071	79078	79085	79092
618	79099	79106	79113	79120	79127	79134	79141	79148	79155	79162
619	79169	79176	79183	79190	79197	79204	79211	79218	79225	79232
620	79239	79246	79253	79260	79267	79274	79281	79288	79295	79302
621	79309	79316	79323	79330	79337	79344	79351	79358	79365	79372
622	79379	79386	79393	79400	79407	79414	79421	79428	79435	79442
623	79449	79456	79463	79470	79477	79484	79491	79498	79505	79511
624	79518	79525	79532	79539	79546	79553	79560	79567	79574	79581
625	79588	79595	79602	79609	79616	79623	79630	79637	79644	79650
626	79657	79664	79671	79678	79685	79692	79699	79706	79713	79720
627	79727	79734	79741	79748	79754	79761	79768	79775	79782	79789
628	79796	79803	79810	79817	79824	79831	79837	79844	79851	79858
629	79865	79872	79879	79886	79893	79900	79906	79913	79920	79927
630	79934	79941	79948	79955	79962	79969	79975	79982	79989	79996
631	80003	80010	80017	80024	80030	80037	80044	80051	80058	80065
632	80072	80079	80085	80092	80099	80106	80113	80120	80127	80134
633	80140	80147	80154	80161	80168	80175	80182	80188	80195	80202
634	80209	80216	80223	80229	80236	80243	80250	80257	80264	80271
635	80277	80284	80291	80298	80305	80312	80318	80325	80332	80339
636	80346	80353	80359	80366	80373	80380	80387	80393	80400	80407
637	80414	80421	80428	80434	80441	80448	80455	80462	80468	80475
638	80482	80489	80496	80502	80509	80516	80523	80530	80536	80543
639	80550	80557	80564	80570	80577	80584	80591	80598	80604	80611
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.

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LOGARITHMS OF NUMBERS.

No. 6400—7000					Log. 80618—84510					
No.	0	1	2	3	4	5	6	7	8	9
640	80618	80625	80632	80638	80645	80652	80659	80665	80672	80679
641	80686	80693	80699	80706	80713	80720	80726	80733	80740	80747
642	80754	80760	80767	80774	80781	80787	80794	80801	80808	80814
643	80821	80828	80835	80841	80848	80855	80862	80868	80875	80882
644	80889	80895	80902	80909	80916	80922	80929	80936	80943	80949
645	80956	80963	80969	80976	80983	80990	80996	81003	81010	81017
646	81023	81030	81037	81043	81050	81057	81064	81070	81077	81084
647	81090	81097	81104	81111	81117	81124	81131	81137	81144	81151
648	81158	81164	81171	81178	81184	81191	81198	81204	81211	81218
649	81224	81231	81238	81245	81251	81258	81265	81271	81278	81285
650	81291	81298	81305	81311	81318	81325	81331	81338	81345	81351
651	81358	81365	81371	81378	81385	81391	81398	81405	81411	81418
652	81425	81431	81438	81445	81451	81458	81465	81471	81478	81485
653	81491	81498	81505	81511	81518	81525	81531	81538	81544	81551
654	81558	81564	81571	81578	81584	81591	81598	81604	81611	81617
655	81624	81631	81637	81644	81651	81657	81664	81671	81677	81684
656	81690	81697	81704	81710	81717	81723	81730	81737	81743	81750
657	81757	81763	81770	81776	81783	81790	81796	81803	81809	81816
658	81823	81829	81836	81842	81849	81856	81862	81869	81875	81882
659	81889	81895	81902	81908	81915	81921	81928	81935	81941	81948
660	81954	81961	81968	81974	81981	81987	81994	82000	82007	82014
661	82020	82027	82033	82040	82046	82053	82060	82066	82073	82079
662	82086	82092	82099	82105	82112	82119	82125	82132	82138	82145
663	82151	82158	82164	82171	82178	82184	82191	82197	82204	82210
664	82217	82223	82230	82236	82243	82249	82256	82263	82269	82276
665	82282	82289	82295	82302	82308	82315	82321	82328	82334	82341
666	82347	82354	82360	82367	82373	82380	82387	82393	82400	82406
667	82413	82419	82426	82432	82439	82445	82452	82458	82465	82471
668	82478	82484	82491	82497	82504	82510	82517	82523	82530	82536
669	82543	82549	82556	82562	82569	82575	82582	82588	82595	82601
670	82607	82614	82620	82627	82633	82640	82646	82653	82659	82665
671	82672	82679	82685	82692	82698	82705	82711	82718	82724	82730
672	82737	82743	82750	82756	82763	82769	82776	82782	82789	82795
673	82802	82808	82814	82821	82827	82834	82840	82847	82853	82860
674	82866	82872	82879	82885	82892	82898	82905	82911	82918	82924
675	82930	82937	82943	82950	82956	82963	82969	82975	82982	82988
676	82995	83001	83008	83014	83020	83027	83033	83040	83046	83052
677	83059	83065	83072	83078	83085	83091	83097	83104	83110	83117
678	83123	83129	83136	83142	83149	83155	83161	83168	83174	83181
679	83187	83193	83200	83206	83213	83219	83225	83232	83238	83245
680	83251	83257	83264	83270	83276	83283	83289	83296	83302	83308
681	83315	83321	83327	83334	83340	83347	83353	83359	83366	83372
682	83378	83385	83391	83398	83404	83410	83417	83423	83429	83436
683	83442	83448	83455	83461	83467	83474	83480	83487	83493	83499
684	83506	83512	83518	83525	83531	83537	83544	83550	83556	83563
685	83569	83575	83582	83588	83594	83601	83607	83613	83620	83626
686	83632	83639	83645	83651	83658	83664	83670	83677	83683	83689
687	83696	83702	83708	83715	83721	83727	83734	83740	83746	83753
688	83759	83765	83771	83778	83784	83790	83797	83803	83809	83816
689	83822	83828	83835	83841	83847	83853	83860	83866	83872	83879
690	83885	83891	83897	83904	83910	83916	83923	83929	83935	83942
691	83948	83954	83960	83967	83973	83979	83985	83992	83998	84004
692	84011	84017	84023	84029	84036	84042	84048	84055	84061	84067
693	84073	84080	84086	84092	84098	84105	84111	84117	84123	84130
694	84136	84142	84148	84155	84161	84167	84173	84180	84186	84192
695	84198	84205	84211	84217	84223	84230	84236	84242	84248	84255
696	84261	84267	84273	84280	84286	84292	84298	84305	84311	84317
697	84323	84330	84336	84342	84348	84354	84361	84367	84373	84379
698	84386	84392	84398	84404	84410	84417	84423	84429	84435	84442
699	84448	84454	84460	84466	84473	84479	84485	84491	84497	84504

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 7000—7600				Log. 84510—88081						
No.	0	1	2	3	4	5	6	7	8	9
700	84510	84516	84522	84528	84535	84541	84547	84553	84559	84566
701	84572	84578	84584	84590	84597	84603	84609	84615	84621	84628
702	84634	84640	84646	84652	84658	84665	84671	84677	84683	84689
703	84696	84702	84708	84714	84720	84726	84733	84739	84745	84751
704	84757	84763	84770	84776	84782	84788	84794	84800	84807	84813
705	84819	84825	84831	84837	84844	84850	84856	84862	84868	84874
706	84880	84887	84893	84899	84905	84911	84917	84924	84930	84936
707	84942	84948	84954	84960	84967	84973	84979	84985	84991	84997
708	85003	85009	85016	85022	85028	85034	85040	85046	85052	85058
709	85065	85071	85077	85083	85089	85095	85101	85107	85114	85120
710	85126	85132	85138	85144	85150	85156	85163	85169	85175	85181
711	85187	85193	85199	85205	85211	85217	85224	85230	85236	85242
712	85248	85254	85260	85266	85272	85278	85285	85291	85297	85303
713	85309	85315	85321	85327	85333	85339	85345	85352	85358	85364
714	85370	85376	85382	85388	85394	85400	85406	85412	85418	85425
715	85431	85437	85443	85449	85455	85461	85467	85473	85479	85485
716	85491	85497	85503	85509	85516	85522	85528	85534	85540	85546
717	85552	85558	85564	85570	85576	85582	85588	85594	85600	85606
718	85612	85618	85625	85631	85637	85643	85649	85655	85661	85667
719	85673	85679	85685	85691	85697	85703	85709	85715	85721	85727
720	85733	85739	85745	85751	85757	85763	85769	85775	85781	85788
721	85794	85800	85806	85812	85818	85824	85830	85836	85842	85848
722	85854	85860	85866	85872	85878	85884	85890	85896	85902	85908
723	85914	85920	85926	85932	85938	85944	85950	85956	85962	85968
724	85974	85980	85986	85992	85998	86004	86010	86016	86022	86028
725	86034	86040	86046	86052	86058	86064	86070	86076	86082	86088
726	86094	86100	86106	86112	86118	86124	86130	86136	86141	86147
727	86153	86159	86165	86171	86177	86183	86189	86195	86201	86207
728	86213	86219	86225	86231	86237	86243	86249	86255	86261	86267
729	86273	86279	86285	86291	86297	86303	86309	86314	86320	86326
730	86332	86338	86344	86350	86356	86362	86368	86374	86380	86386
731	86392	86398	86404	86410	86415	86421	86427	86433	86439	86445
732	86451	86457	86463	86469	86475	86481	86487	86493	86499	86504
733	86510	86516	86522	86528	86534	86540	86546	86552	86558	86564
734	86570	86576	86581	86587	86593	86599	86605	86611	86617	86623
735	86629	86635	86641	86646	86652	86658	86664	86670	86676	86682
736	86688	86694	86700	86705	86711	86717	86723	86729	86735	86741
737	86747	86753	86759	86764	86770	86776	86782	86788	86794	86800
738	86806	86812	86817	86823	86829	86835	86841	86847	86853	86859
739	86864	86870	86876	86882	86888	86894	86900	86906	86911	86917
740	86923	86929	86935	86941	86947	86953	86958	86964	86970	86976
741	86982	86988	86994	86999	87005	87011	87017	87023	87029	87035
742	87040	87046	87052	87058	87064	87070	87075	87081	87087	87093
743	87099	87105	87111	87116	87122	87128	87134	87140	87146	87151
744	87157	87163	87169	87175	87181	87186	87192	87198	87204	87210
745	87216	87221	87227	87233	87239	87245	87251	87256	87262	87268
746	87274	87280	87286	87291	87297	87303	87309	87315	87320	87326
747	87332	87338	87344	87349	87355	87361	87367	87373	87379	87384
748	87390	87396	87402	87408	87413	87419	87425	87431	87437	87442
749	87448	87454	87460	87466	87471	87477	87483	87489	87495	87500
750	87506	87512	87518	87523	87529	87535	87541	87547	87552	87558
751	87564	87570	87576	87581	87587	87593	87599	87604	87610	87616
752	87622	87628	87633	87639	87645	87651	87656	87662	87668	87674
753	87679	87685	87691	87697	87703	87708	87714	87720	87726	87731
754	87737	87743	87749	87754	87760	87766	87772	87777	87783	87789
755	87795	87800	87806	87812	87818	87823	87829	87835	87841	87846
756	87852	87858	87864	87869	87875	87881	87887	87892	87898	87904
757	87910	87915	87921	87927	87933	87938	87944	87950	87955	87961
758	87967	87973	87978	87984	87990	87996	88001	88007	88013	88018
759	88024	88030	88036	88041	88047	88053	88058	88064	88070	88076
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.
LOGARITHMS OF NUMBERS.

No. 7600—8200										
Log. 88081—91381										
No.	0	1	2	3	4	5	6	7	8	9
760	88081	88087	88093	88098	88104	88110	88116	88121	88127	88133
761	88138	88144	88150	88156	88161	88167	88173	88178	88184	88190
762	88195	88201	88207	88213	88218	88224	88230	88235	88241	88247
763	88252	88258	88264	88270	88275	88281	88287	88292	88298	88304
764	88309	88315	88321	88326	88332	88338	88343	88349	88355	88360
765	88366	88372	88377	88383	88389	88395	88400	88406	88412	88417
766	88423	88429	88434	88440	88446	88451	88457	88463	88468	88474
767	88480	88485	88491	88497	88502	88508	88513	88519	88525	88530
768	88536	88542	88547	88553	88559	88564	88570	88576	88581	88587
769	88593	88598	88604	88610	88615	88621	88627	88632	88638	88643
770	88649	88655	88660	88666	88672	88677	88683	88689	88694	88700
771	88705	88711	88717	88722	88728	88734	88739	88745	88750	88756
772	88762	88767	88773	88779	88784	88790	88795	88801	88807	88812
773	88818	88824	88829	88835	88840	88846	88852	88857	88863	88868
774	88874	88880	88885	88891	88897	88902	88908	88913	88919	88925
775	88930	88936	88941	88947	88953	88958	88964	88969	88975	88981
776	88986	88992	88997	89003	89009	89014	89020	89025	89031	89037
777	89042	89048	89053	89059	89064	89070	89076	89081	89087	89092
778	89098	89104	89109	89115	89120	89126	89131	89137	89143	89148
779	89154	89159	89165	89170	89176	89182	89187	89193	89198	89204
780	89209	89215	89221	89226	89232	89237	89243	89248	89254	89260
781	89265	89271	89276	89282	89287	89293	89298	89304	89310	89315
782	89321	89326	89332	89337	89343	89348	89354	89360	89365	89371
783	89376	89382	89387	89393	89398	89404	89409	89415	89421	89426
784	89432	89437	89443	89448	89454	89459	89465	89470	89476	89481
785	89487	89492	89498	89504	89509	89515	89520	89526	89531	89537
786	89542	89548	89553	89559	89564	89570	89575	89581	89586	89592
787	89597	89603	89609	89614	89620	89625	89631	89636	89642	89647
788	89653	89658	89664	89669	89675	89680	89686	89691	89697	89702
789	89708	89713	89719	89724	89730	89735	89741	89746	89752	89757
790	89763	89768	89774	89779	89785	89790	89796	89801	89807	89812
791	89818	89823	89829	89834	89840	89845	89851	89856	89862	89867
792	89873	89878	89883	89889	89894	89900	89905	89911	89916	89922
793	89927	89933	89938	89944	89949	89955	89960	89966	89971	89977
794	89982	89988	89993	89998	90004	90009	90015	90020	90026	90031
795	90037	90042	90048	90053	90059	90064	90069	90075	90080	90086
796	90091	90097	90102	90108	90113	90119	90124	90129	90135	90140
797	90146	90151	90157	90162	90168	90173	90179	90184	90189	90195
798	90200	90206	90211	90217	90222	90227	90233	90238	90244	90249
799	90255	90260	90266	90271	90276	90282	90287	90293	90298	90304
800	90309	90314	90320	90325	90331	90336	90342	90347	90352	90358
801	90363	90369	90374	90380	90385	90390	90396	90401	90407	90412
802	90417	90423	90428	90434	90439	90445	90450	90455	90461	90466
803	90472	90477	90482	90488	90493	90499	90504	90509	90515	90520
804	90526	90531	90536	90542	90547	90553	90558	90563	90569	90574
805	90580	90585	90590	90596	90601	90607	90612	90617	90623	90628
806	90634	90639	90644	90650	90655	90660	90666	90671	90677	90682
807	90687	90693	90698	90703	90709	90714	90720	90725	90730	90736
808	90741	90747	90752	90757	90763	90768	90773	90779	90784	90789
809	90795	90800	90806	90811	90816	90822	90827	90832	90838	90843
810	90849	90854	90859	90865	90870	90875	90881	90886	90891	90897
811	90902	90907	90913	90918	90924	90929	90934	90940	90945	90950
812	90956	90961	90966	90972	90977	90982	90988	90993	90998	91004
813	91009	91014	91020	91025	91030	91036	91041	91046	91052	91057
814	91062	91068	91073	91078	91084	91089	91094	91100	91105	91110
815	91116	91121	91126	91132	91137	91142	91148	91153	91158	91164
816	91169	91174	91180	91185	91190	91196	91201	91206	91212	91217
817	91222	91228	91233	91238	91243	91249	91254	91259	91265	91270
818	91275	91281	91286	91291	91297	91302	91307	91312	91318	91323
819	91328	91334	91339	91344	91350	91355	91360	91365	91371	91376

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 8200—8800					Log. 91381—94448					
No.	0	1	2	3	4	5	6	7	8	9
820	91381	91387	91592	91397	91403	91408	91413	91418	91424	91429
821	91434	91440	91445	91450	91455	91461	91466	91471	91477	91482
822	91487	91492	91498	91503	91508	91514	91519	91524	91529	91535
823	91540	91545	91551	91556	91561	91566	91572	91577	91582	91587
824	91593	91598	91603	91609	91614	91619	91624	91630	91635	91640
825	91645	91651	91656	91661	91666	91672	91677	91682	91687	91693
826	91698	91703	91709	91714	91719	91724	91730	91735	91740	91745
827	91751	91756	91761	91766	91772	91777	91782	91787	91793	91798
828	91803	91808	91814	91819	91824	91829	91834	91840	91845	91850
829	91855	91861	91866	91871	91876	91882	91887	91892	91897	91903
830	91908	91913	91918	91924	91929	91934	91939	91944	91950	91955
831	91960	91965	91971	91976	91981	91986	91991	91997	92002	92007
832	92012	92018	92023	92028	92033	92038	92044	92049	92054	92059
833	92065	92070	92075	92080	92085	92091	92096	92101	92106	92111
834	92117	92122	92127	92132	92137	92143	92148	92153	92158	92163
835	92169	92174	92179	92184	92189	92195	92200	92205	92210	92215
836	92221	92226	92231	92236	92241	92247	92252	92257	92262	92267
837	92273	92278	92283	92288	92293	92298	92304	92309	92314	92319
838	92324	92329	92335	92340	92345	92350	92355	92361	92366	92371
839	92376	92381	92387	92392	92397	92402	92407	92412	92418	92423
840	92428	92433	92438	92443	92449	92454	92459	92464	92469	92474
841	92480	92485	92490	92495	92500	92505	92511	92516	92521	92526
842	92531	92536	92542	92547	92552	92557	92562	92567	92572	92578
843	92583	92588	92593	92598	92603	92609	92614	92619	92624	92629
844	92634	92639	92645	92650	92655	92660	92665	92670	92675	92681
845	92686	92691	92696	92701	92706	92711	92716	92722	92727	92732
846	92737	92742	92747	92752	92758	92763	92768	92773	92778	92783
847	92788	92793	92799	92804	92809	92814	92819	92824	92829	92834
848	92840	92845	92850	92855	92860	92865	92870	92875	92881	92886
849	92891	92896	92901	92906	92911	92916	92921	92927	92932	92937
850	92942	92947	92952	92957	92962	92967	92973	92978	92983	92988
851	92993	92998	93003	93008	93013	93018	93024	93029	93034	93039
852	93044	93049	93054	93059	93064	93069	93075	93080	93085	93090
853	93095	93100	93105	93110	93115	93120	93125	93131	93136	93141
854	93146	93151	93156	93161	93166	93171	93176	93181	93186	93192
855	93197	93202	93207	93212	93217	93222	93227	93232	93237	93242
856	93247	93252	93257	93263	93268	93273	93278	93283	93288	93293
857	93298	93303	93308	93313	93318	93323	93328	93334	93339	93344
858	93349	93354	93359	93364	93369	93374	93379	93384	93389	93394
859	93399	93404	93409	93414	93420	93425	93430	93435	93440	93445
860	93450	93455	93460	93465	93470	93475	93480	93485	93490	93495
861	93500	93505	93510	93515	93520	93526	93531	93536	93541	93546
862	93551	93556	93561	93566	93571	93576	93581	93586	93591	93596
863	93601	93606	93611	93616	93621	93626	93631	93636	93641	93646
864	93651	93656	93661	93666	93671	93676	93682	93687	93692	93697
865	93702	93707	93712	93717	93722	93727	93732	93737	93742	93747
866	93752	93757	93762	93767	93772	93777	93782	93787	93792	93797
867	93802	93807	93812	93817	93822	93827	93832	93837	93842	93847
868	93852	93857	93862	93867	93872	93877	93882	93887	93892	93897
869	93902	93907	93912	93917	93922	93927	93932	93937	93942	93947
870	93952	93957	93962	93967	93972	93977	93982	93987	93992	93997
871	94002	94007	94012	94017	94022	94027	94032	94037	94042	94047
872	94052	94057	94062	94067	94072	94077	94082	94086	94091	94096
873	94101	94106	94111	94116	94121	94126	94131	94136	94141	94146
874	94151	94156	94161	94166	94171	94176	94181	94186	94191	94196
875	94201	94206	94211	94216	94221	94226	94231	94236	94240	94245
876	94250	94255	94260	94265	94270	94275	94280	94285	94290	94295
877	94300	94305	94310	94315	94320	94325	94330	94335	94340	94345
878	94349	94354	94359	94364	94369	94374	94379	94384	94389	94394
879	94399	94404	94409	94414	94419	94424	94429	94433	94438	94443
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.
LOGARITHMS OF NUMBERS.

No. 8800—9400				Log. 94448—97313						
No.	0	1	2	3	4	5	6	7	8	9
880	94448	94453	94458	94463	94468	94473	94478	94483	94488	94493
881	94498	94503	94507	94512	94517	94522	94527	94532	94537	94542
882	94547	94552	94557	94562	94567	94571	94576	94581	94586	94591
883	94596	94601	94606	94611	94616	94621	94626	94630	94635	94640
884	94645	94650	94655	94660	94665	94670	94675	94680	94685	94689
885	94694	94699	94704	94709	94714	94719	94724	94729	94734	94738
886	94743	94748	94753	94758	94763	94768	94773	94778	94783	94787
887	94792	94797	94802	94807	94812	94817	94822	94827	94832	94836
888	94841	94846	94851	94856	94861	94866	94871	94876	94880	94885
889	94890	94895	94900	94905	94910	94915	94919	94924	94929	94934
890	94939	94944	94949	94954	94959	94963	94968	94973	94978	94983
891	94988	94993	94998	95002	95007	95012	95017	95022	95027	95032
892	95036	95041	95046	95051	95056	95061	95066	95071	95075	95080
893	95085	95090	95095	95100	95105	95109	95114	95119	95124	95129
894	95134	95139	95143	95148	95153	95158	95163	95168	95173	95177
895	95182	95187	95192	95197	95202	95207	95211	95216	95221	95226
896	95231	95236	95240	95245	95250	95255	95260	95265	95270	95274
897	95279	95284	95289	95294	95299	95303	95308	95313	95318	95323
898	95328	95333	95337	95342	95347	95352	95357	95361	95366	95371
899	95376	95381	95386	95390	95395	95400	95405	95410	95415	95419
900	95424	95429	95434	95439	95444	95448	95453	95458	95463	95468
901	95472	95477	95482	95487	95492	95497	95501	95506	95511	95516
902	95521	95525	95530	95535	95540	95545	95550	95554	95559	95564
903	95569	95574	95578	95583	95588	95593	95598	95602	95607	95612
904	95617	95622	95626	95631	95636	95641	95646	95650	95655	95660
905	95665	95670	95674	95679	95684	95689	95694	95698	95703	95708
906	95713	95718	95722	95727	95732	95737	95742	95746	95751	95756
907	95761	95766	95770	95775	95780	95785	95789	95794	95799	95804
908	95809	95813	95818	95823	95828	95833	95837	95842	95847	95852
909	95856	95861	95866	95871	95875	95880	95885	95890	95895	95899
910	95904	95909	95914	95918	95923	95928	95933	95938	95942	95947
911	95952	95957	95961	95966	95971	95976	95980	95985	95990	95995
912	95999	96004	96009	96014	96019	96023	96028	96033	96038	96042
913	96047	96052	96057	96061	96066	96071	96076	96080	96085	96090
914	96095	96099	96104	96109	96114	96118	96123	96128	96133	96137
915	96142	96147	96152	96156	96161	96166	96171	96175	96180	96185
916	96190	96194	96199	96204	96209	96213	96218	96223	96227	96232
917	96237	96242	96246	96251	96256	96261	96265	96270	96275	96280
918	96284	96289	96294	96298	96303	96308	96313	96317	96322	96327
919	96332	96336	96341	96346	96350	96355	96360	96365	96369	96374
920	96379	96384	96388	96393	96398	96402	96407	96412	96417	96421
921	96426	96431	96435	96440	96445	96450	96454	96459	96464	96468
922	96473	96478	96483	96487	96492	96497	96501	96506	96511	96515
923	96520	96525	96530	96534	96539	96544	96548	96553	96558	96563
924	96567	96572	96577	96581	96586	96591	96595	96600	96605	96609
925	96614	96619	96624	96628	96633	96638	96642	96647	96652	96656
926	96661	96666	96670	96675	96680	96685	96689	96694	96699	96703
927	96708	96713	96717	96722	96727	96731	96736	96741	96745	96750
928	96755	96759	96764	96769	96774	96778	96783	96788	96792	96797
929	96802	96806	96811	96816	96820	96825	96830	96834	96839	96844
930	96848	96853	96858	96862	96867	96872	96876	96881	96886	96890
931	96895	96900	96904	96909	96914	96918	96923	96928	96932	96937
932	96942	96946	96951	96956	96960	96965	96970	96974	96979	96984
933	96988	96993	96997	97002	97007	97011	97016	97021	97025	97030
934	97035	97039	97044	97049	97053	97058	97063	97067	97072	97077
935	97081	97086	97090	97095	97100	97104	97109	97114	97118	97123
936	97128	97132	97137	97142	97146	97151	97155	97160	97165	97169
937	97174	97179	97183	97188	97192	97197	97202	97206	97211	97216
938	97220	97225	97230	97234	97239	97243	97248	97253	97257	97262
939	97267	97271	97276	97280	97285	97290	97294	97299	97304	97308
	0	1	2	3	4	5	6	7	8	9

TABLE VIII.

LOGARITHMS OF NUMBERS.

No. 9400—10000						Log. 97313—99996				
No.	0	1	2	3	4	5	6	7	8	9
940	97313	97317	97322	97327	97331	97336	97340	97345	97350	97354
941	97359	97364	97368	97373	97377	97382	97387	97391	97396	97400
942	97405	97410	97414	97419	97424	97428	97433	97437	97442	97447
943	97451	97456	97460	97465	97470	97474	97479	97483	97488	97493
944	97497	97502	97506	97511	97516	97520	97525	97529	97534	97539
945	97543	97548	97552	97557	97562	97566	97571	97575	97580	97585
946	97589	97594	97598	97603	97607	97612	97617	97621	97626	97630
947	97635	97640	97644	97649	97653	97658	97663	97667	97672	97676
948	97681	97685	97690	97695	97699	97704	97708	97713	97717	97722
949	97727	97731	97736	97740	97745	97749	97754	97759	97763	97768
950	97772	97777	97782	97786	97791	97795	97800	97804	97809	97813
951	97818	97823	97827	97832	97836	97841	97845	97850	97855	97859
952	97864	97868	97873	97877	97882	97886	97891	97896	97900	97905
953	97909	97914	97918	97923	97928	97932	97937	97941	97946	97950
954	97955	97959	97964	97968	97973	97978	97982	97987	97991	97996
955	98000	98005	98009	98014	98019	98023	98028	98032	98037	98041
956	98046	98050	98055	98059	98064	98068	98073	98078	98082	98087
957	98091	98096	98100	98105	98109	98114	98118	98123	98127	98132
958	98137	98141	98146	98150	98155	98159	98164	98168	98173	98177
959	98182	98186	98191	98195	98200	98204	98209	98214	98218	98223
960	98227	98232	98236	98241	98245	98250	98254	98259	98263	98268
961	98272	98277	98281	98286	98290	98295	98299	98304	98308	98313
962	98318	98322	98327	98331	98336	98340	98345	98349	98354	98358
963	98363	98367	98372	98376	98381	98385	98390	98394	98399	98403
964	98408	98412	98417	98421	98426	98430	98435	98439	98444	98448
965	98453	98457	98462	98466	98471	98475	98480	98484	98489	98493
966	98498	98502	98507	98511	98516	98520	98525	98529	98534	98538
967	98543	98547	98552	98556	98561	98565	98570	98574	98579	98583
968	98588	98592	98597	98601	98605	98610	98614	98619	98623	98628
969	98632	98637	98641	98646	98650	98655	98659	98664	98668	98673
970	98677	98682	98686	98691	98695	98700	98704	98709	98713	98717
971	98722	98726	98731	98735	98740	98744	98749	98753	98758	98762
972	98767	98771	98776	98780	98784	98789	98793	98798	98802	98807
973	98811	98816	98820	98825	98829	98834	98838	98843	98847	98851
974	98856	98860	98865	98869	98874	98878	98883	98887	98892	98896
975	98900	98905	98909	98914	98918	98923	98927	98932	98936	98941
976	98945	98949	98954	98958	98963	98967	98972	98976	98981	98985
977	98989	98994	98998	99003	99007	99012	99016	99021	99025	99029
978	99034	99038	99043	99047	99052	99056	99061	99065	99069	99074
979	99078	99083	99087	99092	99096	99100	99105	99109	99114	99118
980	99123	99127	99131	99136	99140	99145	99149	99154	99158	99162
981	99167	99171	99176	99180	99185	99189	99193	99198	99202	99207
982	99211	99216	99220	99224	99229	99233	99238	99242	99247	99251
983	99255	99260	99264	99269	99273	99277	99282	99286	99291	99295
984	99300	99304	99308	99313	99317	99322	99326	99330	99335	99339
985	99344	99348	99352	99357	99361	99366	99370	99374	99379	99383
986	99388	99392	99396	99401	99405	99410	99414	99419	99423	99427
987	99432	99436	99441	99445	99449	99454	99458	99463	99467	99471
988	99476	99480	99484	99489	99493	99498	99502	99506	99511	99515
989	99520	99524	99528	99533	99537	99542	99546	99550	99555	99559
990	99564	99568	99572	99577	99581	99585	99590	99594	99599	99603
991	99607	99612	99616	99621	99625	99629	99634	99638	99642	99647
992	99651	99656	99660	99664	99669	99673	99677	99682	99686	99691
993	99695	99699	99704	99708	99712	99717	99721	99726	99730	99734
994	99739	99743	99747	99752	99756	99760	99765	99769	99774	99778
995	99782	99787	99791	99795	99800	99804	99808	99813	99817	99822
996	99826	99830	99835	99839	99843	99848	99852	99856	99861	99865
997	99870	99874	99878	99883	99887	99891	99896	99900	99904	99909
998	99913	99917	99922	99926	99930	99935	99939	99944	99948	99952
999	99957	99961	99965	99970	99974	99978	99983	99987	99991	99996
	0	1	2	3	4	5	6	7	8	9

TABLE IX.

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TO REDUCE POINTS OF THE COMPASS TO DEGREES, AND CONVERSELY.

North-east Quadrant.	South-east Quadrant.	Points.	D. M. S.	South-west Quadrant.	North-west Quadrant.
North.	South.	0 0	0 0 0	South.	North.
N $\frac{1}{4}$ E	S $\frac{1}{4}$ E	0 $\frac{1}{4}$	2 48 45	S $\frac{1}{4}$ W	N $\frac{1}{4}$ W
N $\frac{1}{2}$ E	S $\frac{1}{2}$ E	0 $\frac{1}{2}$	5 37 30	S $\frac{1}{2}$ W	N $\frac{1}{2}$ W
N $\frac{3}{4}$ E	S $\frac{3}{4}$ E	0 $\frac{3}{4}$	8 26 15	S $\frac{3}{4}$ W	N $\frac{3}{4}$ W
N $\frac{1}{2}$ E	S $\frac{1}{2}$ E	1 0	11 15 0	S $\frac{1}{2}$ W	N $\frac{1}{2}$ W
N $\frac{1}{4}$ E	S $\frac{1}{4}$ E	1 $\frac{1}{4}$	14 3 45	S $\frac{1}{4}$ W	N $\frac{1}{4}$ W
N $\frac{1}{2}$ E	S $\frac{1}{2}$ E	1 $\frac{1}{2}$	16 52 30	S $\frac{1}{2}$ W	N $\frac{1}{2}$ W
N $\frac{3}{4}$ E	S $\frac{3}{4}$ E	1 $\frac{3}{4}$	19 41 15	S $\frac{3}{4}$ W	N $\frac{3}{4}$ W
NNE	SSE	2 0	22 30 0	SSW	NNW
NNE $\frac{1}{4}$ E	SSE $\frac{1}{4}$ E	2 $\frac{1}{4}$	25 18 45	SSW $\frac{1}{4}$ W	NNW $\frac{1}{4}$ W
NNE $\frac{1}{2}$ E	SSE $\frac{1}{2}$ E	2 $\frac{1}{2}$	28 7 30	SSW $\frac{1}{2}$ W	NNW $\frac{1}{2}$ W
NNE $\frac{3}{4}$ E	SSE $\frac{3}{4}$ E	2 $\frac{3}{4}$	30 56 15	SSW $\frac{3}{4}$ W	NNW $\frac{3}{4}$ W
NE $\frac{1}{4}$ N	SE $\frac{1}{4}$ S	3 0	33 45 0	SW $\frac{1}{4}$ S	NW $\frac{1}{4}$ N
NE $\frac{1}{2}$ N	SE $\frac{1}{2}$ S	3 $\frac{1}{2}$	36 33 45	SW $\frac{1}{2}$ S	NW $\frac{1}{2}$ N
NE $\frac{3}{4}$ N	SE $\frac{3}{4}$ S	3 $\frac{3}{4}$	39 22 30	SW $\frac{3}{4}$ S	NW $\frac{3}{4}$ N
NE $\frac{1}{2}$ N	SE $\frac{1}{2}$ S	3 $\frac{1}{2}$	42 11 15	SW $\frac{1}{2}$ S	NW $\frac{1}{2}$ N
NE	SE	4 0	45 0 0	SW	NW
NE $\frac{1}{4}$ E	SE $\frac{1}{4}$ E	4 $\frac{1}{4}$	47 48 45	SW $\frac{1}{4}$ W	NW $\frac{1}{4}$ W
NE $\frac{1}{2}$ E	SE $\frac{1}{2}$ E	4 $\frac{1}{2}$	50 37 30	SW $\frac{1}{2}$ W	NW $\frac{1}{2}$ W
NE $\frac{3}{4}$ E	SE $\frac{3}{4}$ E	4 $\frac{3}{4}$	53 26 15	SW $\frac{3}{4}$ W	NW $\frac{3}{4}$ W
NE $\frac{1}{2}$ E	SE $\frac{1}{2}$ E	5 0	56 15 0	SW $\frac{1}{2}$ W	NW $\frac{1}{2}$ W
NE $\frac{1}{4}$ E	SE $\frac{1}{4}$ E	5 $\frac{1}{4}$	59 3 45	SW $\frac{1}{4}$ W	NW $\frac{1}{4}$ W
NE $\frac{1}{2}$ E	SE $\frac{1}{2}$ E	5 $\frac{1}{2}$	61 52 30	SW $\frac{1}{2}$ W	NW $\frac{1}{2}$ W
NE $\frac{3}{4}$ E	SE $\frac{3}{4}$ E	5 $\frac{3}{4}$	64 41 15	SW $\frac{3}{4}$ W	NW $\frac{3}{4}$ W
ENE	ESE	6 0	67 30 0	WSW	WNW
ENE $\frac{1}{4}$ N	ESE $\frac{1}{4}$ S	6 $\frac{1}{4}$	70 18 45	WSW $\frac{1}{4}$ S	WNW $\frac{1}{4}$ N
ENE $\frac{1}{2}$ N	ESE $\frac{1}{2}$ S	6 $\frac{1}{2}$	73 7 30	WSW $\frac{1}{2}$ S	WNW $\frac{1}{2}$ N
ENE $\frac{3}{4}$ N	ESE $\frac{3}{4}$ S	6 $\frac{3}{4}$	75 56 15	WSW $\frac{3}{4}$ S	WNW $\frac{3}{4}$ N
E $\frac{1}{4}$ N	E $\frac{1}{4}$ S	7 0	78 45 0	W $\frac{1}{4}$ S	W $\frac{1}{4}$ N
E $\frac{1}{2}$ N	E $\frac{1}{2}$ S	7 $\frac{1}{2}$	81 33 45	W $\frac{1}{2}$ S	W $\frac{1}{2}$ N
E $\frac{3}{4}$ N	E $\frac{3}{4}$ S	7 $\frac{3}{4}$	84 22 30	W $\frac{3}{4}$ S	W $\frac{3}{4}$ N
E $\frac{1}{2}$ N	E $\frac{1}{2}$ S	7 $\frac{1}{2}$	87 11 15	W $\frac{1}{2}$ S	W $\frac{1}{2}$ N
E $\frac{1}{4}$ N	E $\frac{1}{4}$ S	8 0	90 0 0	West.	West.

TABLE X.

LOGARITHMIC SINES, TANGENTS, AND SECANTS, TO EVERY POINT AND QUARTER POINT OF THE COMPASS.

Points.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant	Co-secant.	
0 0	0.00000	10.00000	0.00000	Infinite.	10.00000	Infinite.	8 0
0 $\frac{1}{4}$	8.69080	9.99948	8.69182	11.30868	10.00052	11.30920	7 $\frac{1}{4}$
0 $\frac{1}{2}$	8.99130	9.99790	8.99340	11.00660	10.00210	11.00870	7 $\frac{1}{2}$
0 $\frac{3}{4}$	9.16652	9.99527	9.17125	10.82875	10.00473	10.83348	7 $\frac{3}{4}$
1 0	9.29024	9.99157	9.29866	10.70134	10.00843	10.70976	7 0
1 $\frac{1}{4}$	9.38557	9.98679	9.39878	10.60122	10.01321	10.61443	6 $\frac{1}{4}$
1 $\frac{1}{2}$	9.46282	9.98088	9.48194	10.51806	10.01912	10.53718	6 $\frac{1}{2}$
1 $\frac{3}{4}$	9.52749	9.97384	9.55865	10.44635	10.02616	10.47251	6 $\frac{3}{4}$
2 0	9.58284	9.96562	9.61722	10.38278	10.03438	10.41716	6 0
2 $\frac{1}{4}$	9.63099	9.95616	9.67483	10.32517	10.04384	10.36901	5 $\frac{1}{4}$
2 $\frac{1}{2}$	9.67339	9.94543	9.72796	10.27204	10.05457	10.32661	5 $\frac{1}{2}$
2 $\frac{3}{4}$	9.71105	9.93335	9.77770	10.22230	10.06665	10.28895	5 $\frac{3}{4}$
3 0	9.74474	9.91985	9.82489	10.17511	10.08015	10.25596	5 0
3 $\frac{1}{4}$	9.77503	9.90483	9.87020	10.12980	10.09517	10.22497	4 $\frac{1}{4}$
3 $\frac{1}{2}$	9.80236	9.88819	9.91417	10.08583	10.11181	10.19764	4 $\frac{1}{2}$
3 $\frac{3}{4}$	9.82708	9.86979	9.95729	10.04271	10.13021	10.17292	4 $\frac{3}{4}$
4 0	9.84949	9.84949	10.00000	10.00000	10.15051	10.15051	4 0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	Points.

TABLE XI.

LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	0 Degree.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	0.0000	10.0000	0.0000	Infinit.	10.0000	Infinit.	60
1	6.46373	00000	6.46372	13.83627	00000	13.53627	59
2	76476	00000	76476	23524	00000	23524	58
3	94085	00000	94085	05915	00000	05915	57
4	7.06579	00000	7.06579	12.93421	00000	12.93421	56
5	16270	00000	16270	83730	00000	83730	55
6	24188	00000	24188	75812	00000	75812	54
7	30882	00000	30882	69118	00000	69118	53
8	36682	00000	36682	63318	00000	63318	52
9	41797	00000	41797	58203	00000	58203	51
10	7.46373	10.0000	7.46373	12.53627	10.0000	12.53627	50
11	50512	00000	50512	49488	00000	49488	49
12	54291	00000	54291	45709	00000	45709	48
13	57767	00000	57767	42233	00000	42233	47
14	60985	00000	60986	39014	00000	39015	46
15	63982	00000	63982	36018	00000	36018	45
16	66784	00000	66785	33215	00000	33216	44
17	69417	9.9999	69418	30582	00001	30583	43
18	71900	99999	71900	28100	00001	28100	42
19	74248	99999	74248	25752	00001	25752	41
20	7.76475	9.9999	7.76476	12.23524	10.00001	12.23525	40
21	78594	99999	78595	21405	00001	21406	39
22	80615	99999	80615	19385	00001	19385	38
23	82545	99999	82546	17454	00001	17455	37
24	84393	99999	84394	15606	00001	15607	36
25	86166	99999	86167	13833	00001	13834	35
26	87870	99999	87871	12129	00001	12130	34
27	89509	99999	89510	10490	00001	10491	33
28	91088	99999	91089	08911	00001	08912	32
29	92612	99998	92613	07387	00002	07388	31
30	7.94084	9.99998	7.94086	12.05914	10.00002	12.05916	30
31	95508	99998	95510	04490	00002	04492	29
32	96887	99998	96889	03111	00002	03113	28
33	98223	99998	98225	01775	00002	01777	27
34	99520	96998	99522	00478	00002	00480	26
35	8.00779	99998	8.00781	11.99219	00002	11.99221	25
36	02002	99998	02004	97996	00002	97998	24
37	03192	99997	03194	96806	00003	96808	23
38	04350	99997	04353	95647	00003	95650	22
39	05478	99997	05481	94519	00003	94522	21
40	8.06578	9.99997	8.06581	11.93419	10.00003	11.93422	20
41	07650	99997	07653	92347	00003	92350	19
42	08696	99997	08700	91300	00003	91304	18
43	09718	99997	09722	90278	00003	90282	17
44	10717	99996	10720	89280	00004	89283	16
45	11693	99996	11696	88304	00004	88307	15
46	12647	99996	12651	87349	00004	87353	14
47	13581	99996	13585	86415	00004	86419	13
48	14495	99996	14500	85500	00004	85505	12
49	15391	99996	15395	84605	00004	84609	11
50	8.16268	9.99995	8.16273	11.83727	10.00005	11.83732	10
51	17128	99995	17133	82867	00005	82872	9
52	17971	99995	17976	82024	00005	82029	8
53	18798	99995	18804	81196	00005	81202	7
54	19610	99995	19616	80384	00005	80390	6
55	20407	99994	20413	79587	00006	79593	5
56	21189	99994	21195	78805	00006	78811	4
57	21958	99994	21964	78036	00006	78042	3
58	22713	99994	22720	77280	00006	77287	2
59	23456	99994	23462	76538	00006	76544	1
60	24186	99993	24192	75808	00007	75814	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

35

M.	1 Degree.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	8. 24186	9. 99993	8. 24192	11. 75808	10. 00007	11. 75814	60
1	24903	99993	24910	75090	00007	75097	59
2	25609	99998	25616	74884	00007	74891	58
3	26304	99993	26312	73688	00007	73696	57
4	26988	99992	26996	73004	00008	73012	56
5	27661	99992	27669	72331	00008	72339	55
6	28324	99992	28332	71668	00008	71676	54
7	28977	99992	28986	71014	00008	71023	53
8	29621	99992	29629	70371	00008	70379	52
9	30255	99991	30263	69737	00009	69745	51
10	8. 30879	9. 99991	8. 30888	11. 69112	10. 00009	11. 69121	50
11	31495	99991	31505	68495	00009	68505	49
12	32103	99990	32112	67888	00010	67897	48
13	32702	99990	32711	67289	00010	67298	47
14	33292	99990	33302	66698	00010	66708	46
15	33875	99990	33886	66114	00010	66125	45
16	34450	99989	34461	65539	00011	65550	44
17	35018	99989	35029	64971	00011	64982	43
18	35578	99989	35590	64410	00011	64422	42
19	36131	99989	36143	63857	00011	63869	41
20	8. 36678	9. 99988	8. 36689	11. 63311	10. 00012	11. 63322	40
21	37217	99988	37229	62771	00012	62783	39
22	37750	99988	37762	62238	00012	62250	38
23	38276	99987	38289	61711	00013	61724	37
24	38796	99987	38809	61191	00013	61204	36
25	39310	99987	39323	60677	00013	60690	35
26	39818	99986	39832	60168	00014	60182	34
27	40320	99986	40334	59666	00014	59680	33
28	40816	99986	40830	59170	00014	59184	32
29	41307	99985	41321	58679	00015	58693	31
30	8. 41792	9. 99985	8. 41807	11. 58193	10. 00015	11. 58208	30
31	42272	99985	42287	57713	00015	57728	29
32	42746	99984	42762	57238	00016	57254	28
33	43216	99984	43232	56768	00016	56784	27
34	43680	99984	43696	56304	00016	56320	26
35	44139	99983	44156	55844	00017	55861	25
36	44594	99983	44611	55389	00017	55406	24
37	45044	99983	45061	54939	00017	54956	23
38	45489	99982	45507	54493	00018	54511	22
39	45930	99982	45948	54052	00018	54070	21
40	8. 46366	9. 99982	8. 46385	11. 53615	10. 00018	11. 53634	20
41	46798	99981	46817	53183	00019	53201	19
42	47226	99981	47245	52755	00019	52774	18
43	47650	99981	47669	52331	00019	52350	17
44	48069	99980	48089	51911	00020	51931	16
45	48485	99980	48505	51495	00020	51515	15
46	48896	99979	48917	51083	00021	51104	14
47	49304	99979	49325	50675	00021	50696	13
48	49708	99979	49729	50271	00021	50292	12
49	50108	99978	50130	49870	00022	49892	11
50	8. 50504	9. 99978	8. 50527	11. 49473	10. 00022	11. 49496	10
51	50897	99977	50920	49080	00023	49103	9
52	51287	99977	51310	48690	00023	48713	8
53	51673	99977	51696	48304	00023	48327	7
54	52055	99976	52079	47921	00024	47945	6
55	52434	99976	52459	47541	00024	47566	5
56	52810	99975	52835	47165	00025	47190	4
57	53183	99975	53208	46792	00025	46817	3
58	53552	99974	53578	46423	00026	46448	2
59	53919	99974	53945	46055	00026	46081	1
60	54282	99974	54308	45692	00026	45718	0.
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

2 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	8. 54282	9. 99974	8. 54308	11. 45692	10. 00026	11. 45718	60
1	54642	99973	54669	45331	00027	45358	59
2	54999	99973	55027	44973	00027	45001	58
3	55354	99972	55382	44618	00028	44646	57
4	55705	99972	55734	44266	00028	44295	56
5	56054	99971	56083	43917	00029	43946	55
6	56400	99971	56429	43571	00029	43600	54
7	56743	99970	56773	43227	00030	43257	53
8	57084	99970	57114	42886	00030	42916	52
9	57421	99969	57452	42548	00031	42579	51
10	8. 57757	9. 99969	8. 57788	11. 42212	10. 00031	11. 42243	50
11	58089	99968	58121	41879	00032	41911	49
12	58419	99968	58451	41549	00032	41581	48
13	58747	99967	58779	41221	00033	41253	47
14	59072	99967	59105	40895	00033	40928	46
15	59395	99967	59428	40572	00033	40605	45
16	59715	99966	59749	40251	00034	40285	44
17	60033	99966	60068	39932	00034	39967	43
18	60349	99965	60384	39616	00035	39651	42
19	60662	99964	60698	39302	00036	39338	41
20	8. 60973	9. 99964	8. 61009	11. 38991	10. 00036	11. 39027	40
21	61282	99963	61319	38681	00037	38718	39
22	61589	99963	61626	38374	00037	38411	38
23	61894	99962	61931	38069	00038	38106	37
24	62196	99962	62234	37766	00038	37804	36
25	62497	99961	62535	37465	00039	37503	35
26	62795	99961	62834	37166	00039	37205	34
27	63091	99960	63131	36869	00040	36909	33
28	63385	99960	63426	36574	00040	36615	32
29	63678	99959	63718	36282	00041	36322	31
30	8. 63968	9. 99959	8. 64009	11. 35991	10. 00041	11. 36032	30
31	64256	99958	64298	35702	00042	35744	29
32	64543	99958	64585	35415	00042	35457	28
33	64827	99957	64870	35130	00043	35173	27
34	65110	99956	65154	34846	00044	34890	26
35	65391	99956	65435	34565	00044	34609	25
36	65670	99955	65715	34285	00045	34330	24
37	65947	99955	65993	34007	00045	34053	23
38	66223	99954	66269	33731	00046	33777	22
39	66497	99954	66543	33457	00046	33503	21
40	8. 66769	9. 99953	8. 66816	11. 33184	10. 00047	11. 33231	20
41	67039	99952	67087	32913	00048	32961	19
42	67308	99952	67356	32644	00048	32692	18
43	67575	99951	67624	32376	00049	32425	17
44	67841	99951	67890	32110	00049	32159	16
45	68104	99950	68154	31846	00050	31896	15
46	68367	99949	68417	31583	00051	31633	14
47	68627	99949	68678	31322	00051	31373	13
48	68886	99948	68938	31062	00052	31114	12
49	69144	99948	69196	30804	00052	30856	11
50	8. 69400	9. 99947	8. 69453	11. 30547	10. 00053	11. 30600	10
51	69654	99946	69708	30292	00054	30346	9
52	69907	99946	69962	30038	00054	30093	8
53	70159	99945	70214	29786	00055	29841	7
54	70409	99944	70465	29535	00056	29591	6
55	70658	99944	70714	29286	00056	29342	5
56	70905	99943	70962	29038	00057	29095	4
57	71151	99942	71208	28792	00058	28849	3
58	71395	99942	71453	28547	00058	28605	2
59	71638	99941	71697	28303	00059	28362	1
60	71880	99940	71940	28060	00060	28120	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	3 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	8. 71880	9. 99940	8. 71940	11. 28060	10. 00060	11. 28120	60
1	72120	99940	72181	27819	00060	27880	59
2	72359	99939	72420	27580	00061	27641	58
3	72597	99938	72659	27341	00062	27403	57
4	72834	99938	72896	27104	00062	27166	56
5	73069	99937	73132	26868	00063	26931	55
6	73303	99936	73366	26634	00064	26697	54
7	73535	99936	73600	26400	00064	26465	53
8	73767	99935	73832	26168	00065	26233	52
9	73997	99934	74063	25937	00066	26003	51
10	8. 74226	9. 99934	8. 74292	11. 25708	10. 00066	11. 25774	50
11	74454	99933	74521	25479	00067	25546	49
12	74680	99932	74748	25252	00068	25320	48
13	74906	99932	74974	25026	00068	25094	47
14	75130	99931	75199	24801	00069	24870	46
15	75353	99930	75423	24577	00070	24647	45
16	75575	99929	75645	24355	00071	24425	44
17	75795	99929	75867	24138	00071	24205	43
18	76015	99928	76087	23913	00072	23985	42
19	76234	99927	76306	23694	00073	23766	41
20	8. 76451	9. 99926	8. 76525	11. 23475	10. 00074	11. 23549	40
21	76667	99926	76742	23258	00074	23333	39
22	76883	99925	76958	23042	00075	23117	38
23	77097	99924	77173	22827	00076	22903	37
24	77310	99923	77387	22613	00077	22690	36
25	77522	99923	77600	22400	00077	22478	35
26	77733	99922	77811	22189	00078	22267	34
27	77943	99921	78022	21978	00079	22057	33
28	78152	99920	78232	21768	00080	21848	32
29	78360	99920	78441	21559	00080	21640	31
30	8. 78568	9. 99919	8. 78649	11. 21351	10. 00081	11. 21432	30
31	78774	99918	78855	21145	00082	21226	29
32	78979	99917	79061	20939	00083	21021	28
33	79183	99917	79266	20734	00083	20817	27
34	79386	99916	79470	20530	00084	20614	26
35	79588	99915	79673	20327	00085	20412	25
36	79789	99914	79875	20125	00086	20211	24
37	79990	99913	80076	19924	00087	20010	23
38	80189	99913	80277	19723	00087	19811	22
39	80388	99912	80476	19524	00088	19612	21
40	8. 80585	9. 99911	8. 80674	11. 19326	10. 00089	11. 19415	20
41	80782	99910	80872	19128	00090	19218	19
42	80978	99909	81068	18932	00091	19022	18
43	81173	99909	81264	18736	00091	18827	17
44	81367	99908	81459	18541	00092	18633	16
45	81560	99907	81653	18347	00093	18440	15
46	81752	99906	81846	18154	00094	18248	14
47	81944	99905	82038	17962	00095	18056	13
48	82134	99904	82230	17770	00096	17866	12
49	82324	99904	82420	17580	00096	17676	11
50	8. 82513	9. 99903	8. 82610	11. 17390	10. 00097	11. 17487	10
51	82701	99902	82799	17201	00098	17299	9
52	82888	99901	82987	17013	00099	17112	8
53	83075	99900	83175	16825	00100	16925	7
54	83261	99899	83361	16639	00101	16739	6
55	83446	99898	83547	16453	00102	16554	5
56	83630	99898	83732	16268	00102	16370	4
57	83813	99897	83916	16084	00103	16187	3
58	83996	99896	84100	15900	00104	16004	2
59	84177	99895	84282	15718	00105	15823	1
60	84358	99894	84464	15536	00106	15642	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	4 Degrees.						
	Sine	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	8. 84358	9. 99894	8. 84464	11. 15536	10. 00106	11. 15642	60
1	84539	99893	84646	15534	00107	15461	59
2	84718	99892	84826	15174	00108	15282	58
3	84897	99891	85006	14994	00109	15103	57
4	85075	99891	85185	14815	00109	14925	56
5	85252	99890	85363	14637	00110	14748	55
6	85429	99889	85540	14460	00111	14571	54
7	85605	99888	85717	14283	00112	14395	53
8	85780	99887	85893	14107	00113	14220	52
9	85955	99886	86069	13931	00114	14045	51
10	8. 86128	9. 99885	8. 86243	11. 13757	10. 00115	11. 13872	50
11	86301	99884	86417	13583	00116	13699	49
12	86474	99883	86591	13409	00117	13526	48
13	86645	99882	86763	13237	00118	13355	47
14	86816	99881	86935	13065	00119	13184	46
15	86987	99880	87106	12894	00120	13013	45
16	87156	99879	87277	12723	00121	12844	44
17	87325	99879	87447	12553	00121	12675	43
18	87494	99878	87616	12384	00122	12506	42
19	87661	99877	87785	12215	00123	12339	41
20	8. 87829	9. 99876	8. 87953	11. 12047	10. 00124	11. 12171	40
21	87995	99875	88120	11880	00125	12005	39
22	88161	99874	88287	11713	00126	11839	38
23	88326	99873	88453	11547	00127	11674	37
24	88490	99872	88618	11382	00128	11510	36
25	88654	99871	88783	11217	00129	11346	35
26	88817	99870	88948	11052	00130	11183	34
27	88980	99869	89111	10889	00131	11020	33
28	89142	99868	89274	10726	00132	10858	32
29	89304	99867	89437	10563	00133	10696	31
30	8. 89464	9. 99866	8. 89598	11. 10402	10. 00134	11. 10536	30
31	89624	99865	89760	10240	00135	10375	29
32	89784	99864	89920	10080	00136	10216	28
33	89943	99863	90080	9920	00137	10057	27
34	90102	99862	90240	9760	00138	9898	26
35	90260	99861	90399	9601	00139	9740	25
36	90417	99860	90557	9443	00140	9583	24
37	90574	99859	90715	9285	00141	9426	23
38	90730	99858	90872	9128	00142	9270	22
39	90885	99857	91029	8971	00143	9115	21
40	8. 91040	9. 99856	8. 91185	11. 08815	10. 00144	11. 08960	20
41	91195	99855	91340	8860	00145	8805	19
42	91349	99854	91495	8805	00146	8651	18
43	91502	99853	91650	8850	00147	8498	17
44	91655	99852	91803	88197	00148	8345	16
45	91807	99851	91957	88043	00149	8193	15
46	91959	99850	92110	87890	00150	8041	14
47	92110	99848	92262	87738	00152	7890	13
48	92261	99847	92414	87586	00153	7739	12
49	92411	99846	92565	87435	00154	7589	11
50	8. 92561	9. 99845	8. 92716	11. 07284	10. 00155	11. 07439	10
51	92710	99844	92866	07134	00156	07290	9
52	92859	99843	93016	06984	00157	07141	8
53	93007	99842	93165	06835	00158	06993	7
54	93154	99841	93313	06687	00159	06846	6
55	93301	99840	93462	06538	00160	06699	5
56	93448	99839	93609	06391	00161	06552	4
57	93594	99838	93756	06244	00162	06406	3
58	93740	99837	93903	06097	00163	06260	2
59	93885	99836	94049	05951	00164	06115	1
60	94030	99834	94195	05805	00166	05970	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

45 Degrees

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	5 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	8.94030	9.99834	8.94195	11.05805	10.00166	11.05970	60
1	94174	99833	94340	05660	00167	05826	59
2	94317	99832	94485	05515	00168	05683	58
3	94461	99831	94630	05370	00169	05539	57
4	94603	99830	94773	05227	00170	05397	56
5	94746	99829	94917	05083	00171	05254	55
6	94887	99828	95060	04940	00172	05113	54
7	95029	99827	95202	04798	00173	04971	53
8	95170	99825	95344	04656	00175	04830	52
9	95310	99824	95486	04514	00176	04690	51
10	8.95450	9.99823	8.95627	11.04373	10.00177	11.04550	50
11	95589	99822	95767	04233	00178	04411	49
12	95728	99821	95908	04092	00179	04272	48
13	95867	99820	96047	03953	00180	04133	47
14	96005	99819	96187	03813	00181	03995	46
15	96143	99817	96325	03675	00183	03857	45
16	96280	99816	96464	03536	00184	03720	44
17	96417	99815	96602	03398	00185	03583	43
18	96553	99814	96739	03261	00186	03447	42
19	96689	99813	96877	03123	00187	03311	41
20	8.96825	9.99812	8.97013	11.02987	10.00188	11.03175	40
21	96960	99810	97150	02850	00190	03040	39
22	97095	99809	97285	02715	00191	02905	38
23	97229	99808	97421	02579	00192	02771	37
24	97363	99807	97556	02444	00193	02637	36
25	97496	99806	97691	02309	00194	02504	35
26	97629	99804	97835	02175	00196	02371	34
27	97762	99803	97959	02041	00197	02238	33
28	97894	99802	98092	01908	00198	02106	32
29	98026	99801	98225	01775	00199	01974	31
30	8.98157	9.99800	8.98358	11.01642	10.00200	11.01843	30
31	98288	99798	98490	01510	00202	01712	29
32	98419	99797	98622	01378	00203	01581	28
33	98549	99796	98753	01247	00204	01451	27
34	98679	99795	98884	01116	00205	01321	26
35	98808	99793	99015	00983	00207	01192	25
36	98937	99792	99145	00855	00208	01063	24
37	99066	99791	99275	00725	00209	00934	23
38	99194	99790	99405	00595	00210	00806	22
39	99322	99788	99534	00466	00212	00678	21
40	8.99450	9.99787	8.99662	11.00338	10.00213	11.00550	20
41	99577	99786	99791	00209	00214	00423	19
42	99704	99785	99919	00081	00215	00296	18
43	99830	99783	9.00046	10.99954	00217	00170	17
44	99956	99782	00174	99826	00218	00044	16
45	9.00082	99781	00301	99699	00219	10.99918	15
46	00207	99780	00427	99573	00220	99793	14
47	00332	99778	00553	99447	00222	99668	13
48	00456	99777	00679	99321	00223	99544	12
49	00581	99776	00805	99195	00224	99419	11
50	9.00704	9.99775	9.00930	10.99070	10.00225	10.99295	10
51	00828	99773	01055	98945	00227	99172	9
52	00951	99772	01179	98821	00228	99049	8
53	01074	99771	01303	98697	00229	98926	7
54	01196	99769	01427	98573	00231	98804	6
55	01318	99768	01550	98450	00232	98682	5
56	01440	99767	01673	98327	00233	98560	4
57	01561	99765	01796	98204	00235	98439	3
58	01682	99764	01918	98082	00236	98318	2
59	01803	99763	02040	97960	00237	98197	1
60	01923	99761	02162	97838	00239	98077	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	6 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 01923	9. 99761	9. 02162	10. 97838	10. 00239	10. 98077	60
1	02043	99760	02288	97717	00240	97957	59
2	02163	99759	02404	97596	00241	97837	58
3	02283	99757	02525	97475	00243	97717	57
4	02402	99756	02645	97355	00244	97598	56
5	02520	99755	02766	97234	00245	97480	55
6	02639	99753	02885	97115	00247	97361	54
7	02757	99752	03005	96995	00248	97243	53
8	02874	99751	03124	96876	00249	97126	52
9	02992	99749	03242	96758	00251	97008	51
10	9. 03109	9. 99748	9. 03361	10. 96639	10. 00252	10. 96891	50
11	03226	99747	03479	96521	00253	96774	49
12	03342	99745	03597	96403	00255	96658	48
13	03458	99744	03714	96286	00256	96542	47
14	03574	99742	03832	96168	00258	96426	46
15	03690	99741	03948	96052	00259	96310	45
16	03805	99740	04065	95935	00260	96195	44
17	03920	99738	04181	95819	00262	96080	43
18	04034	99737	04297	95703	00263	95966	42
19	04149	99736	04413	95587	00264	95851	41
20	9. 04262	9. 99734	9. 04528	10. 95472	10. 00266	10. 95738	40
21	04376	99733	04643	95357	00267	95624	39
22	04490	99731	04758	95242	00269	95510	38
23	04603	99730	04873	95127	00270	95397	37
24	04715	99728	04987	95013	00272	95285	36
25	04828	99727	05101	94899	00273	95172	35
26	04940	99726	05214	94786	00274	95060	34
27	05052	99724	05328	94672	00276	94948	33
28	05164	99723	05441	94559	00277	94836	32
29	05275	99721	05553	94447	00279	94725	31
30	9. 05386	9. 99720	9. 05666	10. 94334	10. 00280	10. 94614	30
31	05497	99718	05778	94222	00282	94503	29
32	05607	99717	05890	94110	00283	94393	28
33	05717	99716	06002	93998	00284	94283	27
34	05827	99714	06113	93887	00286	94173	26
35	05937	99713	06224	93776	00287	94063	25
36	06046	99711	06335	93665	00289	93954	24
37	06155	99710	06445	93555	00290	93845	23
38	06264	99708	06556	93444	00292	93736	22
39	06372	99707	06666	93334	00293	93628	21
40	9. 06481	9. 99705	9. 06775	10. 93225	10. 00295	10. 93519	20
41	06589	99704	06885	93115	00296	93411	19
42	06696	99702	06994	93006	00298	93304	18
43	06804	99701	07103	92897	00299	93196	17
44	06911	99699	07211	92789	00301	93089	16
45	07018	99698	07320	92680	00302	92982	15
46	07124	99696	07428	92572	00304	92876	14
47	07231	99695	07536	92464	00305	92769	13
48	07337	99693	07643	92357	00307	92663	12
49	07442	99692	07751	92249	00308	92558	11
50	9. 07548	9. 99690	9. 07858	10. 92142	10. 00310	10. 92452	10
51	07653	99689	07964	92036	00311	92347	9
52	07758	99687	08071	91929	00313	92242	8
53	07863	99686	08177	91823	00314	92137	7
54	07968	99684	08283	91717	00316	92032	6
55	08072	99683	08389	91611	00317	91928	5
56	08176	99681	08495	91505	00319	91824	4
57	08280	99680	08600	91400	00320	91720	3
58	08383	99678	08705	91295	00322	91617	2
59	08486	99677	08810	91190	00323	91514	1
60	08589	99675	08914	91086	00325	91411	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co secant.	Secant.	M.

83 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

41

7 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.08589	9.99675	9.08914	10.91086	10.03325	10.91411	60
1	08692	99674	09019	90981	00326	91308	59
2	08795	99672	09123	90877	00328	91205	58
3	08897	99670	09227	90773	00330	91103	57
4	08999	99669	09330	90670	00331	91001	56
5	09101	99667	09434	90566	00333	90899	55
6	09202	99666	09537	90463	00334	90798	54
7	09304	99664	09640	90360	00336	90696	53
8	09405	99663	09742	90258	00337	90595	52
9	09506	99661	09845	90155	00339	90494	51
10	9.09606	9.99659	9.09947	10.90053	10.00341	10.90394	50
11	09707	99658	10049	89951	00342	90293	49
12	09807	99656	10150	89850	00344	90193	48
13	09907	99655	10252	89748	00345	90093	47
14	10006	99653	10353	89647	00347	89994	46
15	10106	99651	10454	89546	00349	89894	45
16	10205	99650	10555	89445	00350	89795	44
17	10304	99648	10656	89344	00352	89696	43
18	10403	99647	10756	89244	00353	89598	42
19	10501	99645	10856	89144	00355	89499	41
20	9.10599	9.99643	9.10956	10.89044	10.00357	10.89401	40
21	10697	99642	11056	88944	00358	89303	39
22	10795	99640	11155	88845	00360	89205	38
23	10893	99638	11254	88746	00362	89107	37
24	10990	99637	11353	88647	00363	89010	36
25	11087	99635	11452	88548	00365	88913	35
26	11184	99633	11551	88449	00367	88816	34
27	11281	99632	11649	88351	00368	88719	33
28	11377	99630	11747	88253	00370	88623	32
29	11474	99629	11845	88155	00371	88526	31
30	9.11570	9.99627	9.11943	10.88057	10.00373	10.88430	30
31	11666	99625	12040	87960	00375	88334	29
32	11761	99624	12138	87862	00376	88239	28
33	11857	99622	12235	87765	00378	88143	27
34	11952	99620	12332	87668	00380	88048	26
35	12047	99618	12428	87572	00382	87953	25
36	12142	99617	12525	87475	00383	87858	24
37	12236	99615	12621	87379	00385	87764	23
38	12331	99613	12717	87283	00387	87669	22
39	12425	99612	12811	87187	00388	87575	21
40	9.12519	9.99610	9.12909	10.87091	10.00390	10.87481	20
41	12612	99608	13004	86996	00392	87388	19
42	12706	99607	13099	86901	00393	87294	18
43	12799	99605	13194	86806	00395	87201	17
44	12892	99603	13289	86711	00397	87108	16
45	12985	99601	13384	86616	00399	87015	15
46	13078	99600	13478	86522	00400	86922	14
47	13171	99598	13573	86427	00402	86829	13
48	13263	99596	13667	86333	00404	86737	12
49	13355	99595	13761	86239	00405	86645	11
50	9.13447	9.99593	9.13854	10.86146	10.00407	10.86553	10
51	13539	99591	13948	86052	00409	86461	9
52	13630	99589	14041	85959	00411	86370	8
53	13722	99588	14134	85866	00412	86278	7
54	13813	99586	14227	85773	00414	86187	6
55	13904	99584	14320	85680	00416	86096	5
56	13994	99582	14412	85588	00418	86006	4
57	14085	99581	14504	85496	00419	85915	3
58	14175	99579	14597	85403	00421	85825	2
59	14266	99577	14688	85312	00423	85734	1
60	14356	99575	14780	85220	00425	85644	0
Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.	

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	8 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.14356	9.99575	9.14780	10.85220	10.00425	10.85644	60
1	14445	99573	14872	85128	00426	85555	59
2	14535	99572	14963	85037	00428	85465	58
3	14624	99570	15054	84946	00430	85376	57
4	14714	99568	15145	84855	00432	85286	56
5	14803	99566	15236	84764	00434	85197	55
6	14891	99565	15327	84673	00435	85109	54
7	14980	99563	15417	84583	00437	85020	53
8	15069	99561	15508	84492	00439	84931	52
9	15157	99559	15598	84402	00441	84843	51
10	9.15245	9.99557	9.15688	10.84312	10.00443	10.84755	50
11	15333	99556	15777	84223	00444	84667	49
12	15421	99554	15867	84133	00446	84579	48
13	15508	99552	15956	84044	00448	84492	47
14	15596	99550	16046	83954	00450	84404	46
15	15683	99548	16135	83865	00452	84317	45
16	15770	99546	16224	83776	00454	84230	44
17	15857	99545	16312	83688	00455	84143	43
18	15944	99543	16401	83599	00457	84056	42
19	16030	99541	16489	83511	00459	83970	41
20	9.16116	9.99539	9.16577	10.83429	10.00461	10.83884	40
21	16203	99537	16665	83335	00463	83797	39
22	16289	99535	16753	83247	00465	83711	38
23	16374	99533	16841	83159	00467	83626	37
24	16460	99532	16928	83072	00468	83540	36
25	16545	99530	17016	82984	00470	83455	35
26	16631	99528	17103	82897	00472	83369	34
27	16716	99526	17190	82810	00474	83284	33
28	16801	99524	17277	82723	00476	83199	32
29	16886	99522	17363	82637	00478	83114	31
30	9.16970	9.99520	9.17450	10.82550	10.00480	10.83030	30
31	17055	99518	17536	82464	00482	82945	29
32	17139	99517	17622	82378	00483	82861	28
33	17223	99515	17708	82292	00485	82777	27
34	17307	99513	17794	82206	00487	82693	26
35	17391	99511	17880	82120	00489	82609	25
36	17474	99509	17965	82035	00491	82526	24
37	17558	99507	18051	81949	00493	82442	23
38	17641	99505	18136	81864	00495	82359	22
39	17724	99503	18221	81779	00497	82276	21
40	9.17807	9.99501	9.18306	10.81694	10.00499	10.82193	20
41	17890	99499	18391	81609	00501	82110	19
42	17973	99497	18475	81525	00503	82027	18
43	18055	99495	18560	81440	00505	81945	17
44	18137	99494	18644	81356	00506	81863	16
45	18220	99492	18728	81272	00508	81780	15
46	18302	99490	18812	81188	00510	81698	14
47	18383	99488	18896	81104	00512	81617	13
48	18465	99486	18979	81021	00514	81535	12
49	18547	99484	19063	80937	00516	81453	11
50	9.18628	9.99482	9.19146	10.80854	10.00518	10.81372	10
51	18709	99480	19229	80771	00520	81291	9
52	18790	99478	19312	80688	00522	81210	8
53	18871	99476	19395	80605	00524	81129	7
54	18952	99474	19478	80522	00526	81048	6
55	19033	99472	19561	80439	00528	80967	5
56	19113	99470	19643	80357	00530	80887	4
57	19193	99468	19725	80275	00532	80807	3
58	19273	99466	19807	80193	00534	80727	2
59	19353	99464	19889	80111	00536	80647	1
60	19433	99462	19971	80029	00538	80567	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	9 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 19433	9. 99462	9. 19971	10. 80029	10. 00588	10. 80567	60
1	19513	99460	20053	79947	00540	80487	59
2	19592	99458	20134	79864	00542	80408	58
3	19672	99456	20216	79784	00544	80328	57
4	19751	99454	20297	79703	00546	80249	56
5	19830	99452	20378	79622	00548	80170	55
6	19909	99450	20459	79541	00550	80091	54
7	19988	99448	20540	79460	00552	80012	53
8	20067	99446	20621	79379	00554	79933	52
9	20145	99444	20701	79299	00556	79855	51
10	9. 20223	9. 99442	9. 20782	10. 79218	10. 00558	10. 79777	50
11	20302	99440	20862	79138	00560	79698	49
12	20380	99438	20942	79058	00562	79620	48
13	20458	99436	21022	78978	00564	79542	47
14	20535	99434	21102	78898	00566	79465	46
15	20613	99432	21182	78818	00568	79387	45
16	20691	99429	21261	78739	00571	79309	44
17	20768	99427	21341	78659	00573	79232	43
18	20845	99425	21420	78580	00575	79155	42
19	20922	99423	21499	78501	00577	79078	41
20	9. 20999	9. 99421	9. 21578	10. 78422	10. 00579	10. 79001	40
21	21076	99419	21657	78343	00581	78924	39
22	21153	99417	21736	78264	00583	78847	38
23	21229	99415	21814	78186	00585	78771	37
24	21306	99413	21893	78107	00587	78694	36
25	21382	99411	21971	78029	00589	78618	35
26	21458	99409	22049	77951	00591	78542	34
27	21534	99407	22127	77873	00593	78466	33
28	21610	99404	22205	77795	00596	78390	32
29	21685	99402	22283	77717	00598	78315	31
30	9. 21761	9. 99400	9. 22361	10. 77639	10. 00600	10. 78239	30
31	21836	99398	22438	77562	00602	78164	29
32	21912	99396	22516	77484	00604	78088	28
33	21987	99394	22593	77407	00606	78013	27
34	22062	99392	22670	77330	00608	77938	26
35	22137	99390	22747	77253	00610	77863	25
36	22211	99388	22824	77176	00612	77789	24
37	22286	99385	22901	77099	00615	77714	23
38	22361	99383	22977	77023	00617	77639	22
39	22435	99381	23054	76946	00619	77565	21
40	9. 22509	9. 99379	9. 23130	10. 76870	10. 00621	10. 77491	20
41	22583	99377	23206	76794	00623	77417	19
42	22657	99375	23283	76717	00625	77343	18
43	22731	99372	23359	76641	00628	77269	17
44	22805	99370	23435	76565	00630	77195	16
45	22878	99368	23510	76490	00632	77122	15
46	22952	99366	23586	76414	00634	77048	14
47	23025	99364	23661	76339	00636	76975	13
48	23098	99362	23737	76263	00638	76902	12
49	23171	99359	23812	76188	00641	76829	11
50	9. 23244	9. 99357	9. 23887	10. 76113	10. 00643	10. 76756	10
51	23317	99355	23962	76038	00645	76683	9
52	23390	99353	24037	75963	00647	76610	8
53	23462	99351	24112	75888	00649	76538	7
54	23535	99348	24186	75814	00652	76465	6
55	23607	99346	24261	75739	00654	76393	5
56	23679	99344	24335	75665	00656	76321	4
57	23752	99342	24410	75590	00658	76248	3
58	23823	99340	24484	75516	00660	76177	2
59	23895	99337	24558	75442	00663	76105	1
60	23967	99335	24632	75368	00665	76033	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	10 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 23967	9. 99335	9. 24632	10. 75368	10. 00665	10. 76038	60
1	24039	99333	24706	75294	00667	75961	59
2	24110	99331	24779	75221	00669	75890	58
3	24181	99328	24853	75147	00672	75819	57
4	24253	99326	24926	75074	00674	75747	56
5	24324	99324	25000	75000	00676	75676	55
6	24395	99322	25073	74927	00678	75605	54
7	24466	99319	25146	74854	00681	75534	53
8	24536	99317	25219	74781	00683	75464	52
9	24607	99315	25292	74708	00685	75393	51
10	9. 24677	9. 99313	9. 25365	10. 74635	10. 00687	10. 75323	50
11	24748	99310	25437	74563	00690	75252	49
12	24818	99308	25510	74490	00692	75182	48
13	24888	99306	25582	74418	00694	75112	47
14	24958	99304	25655	74345	00696	75042	46
15	25028	99301	25727	74273	00699	74972	45
16	25098	99299	25799	74201	00701	74902	44
17	25168	99297	25871	74129	00703	74832	43
18	25237	99294	25943	74057	00706	74763	42
19	25307	99292	26015	73985	00708	74693	41
20	9. 25376	9. 99290	9. 26086	10. 73914	10. 00710	10. 74624	40
21	25445	99288	26158	73842	00712	74555	39
22	25514	99285	26229	73771	00715	74486	38
23	25583	99283	26301	73699	00717	74417	37
24	25652	99281	26372	73628	00719	74348	36
25	25721	99278	26443	73557	00722	74279	35
26	25790	99276	26514	73486	00724	74210	34
27	25858	99274	26585	73415	00726	74142	33
28	25927	99271	26655	73345	00729	74073	32
29	25995	99269	26726	73274	00731	74005	31
30	9. 26063	9. 99267	9. 26797	10. 73203	10. 00733	10. 73937	30
31	26131	99264	26867	73133	00736	73869	29
32	26199	99262	26937	73063	00738	73801	28
33	26267	99260	27008	72992	00740	73733	27
34	26335	99257	27078	72922	00743	73665	26
35	26403	99255	27148	72852	00745	73597	25
36	26470	99252	27218	72782	00748	73530	24
37	26538	99250	27288	72712	00750	73462	23
38	26605	99248	27357	72643	00752	73395	22
39	26672	99245	27427	72573	00755	73328	21
40	9. 26739	9. 99243	9. 27496	10. 72504	10. 00757	10. 73261	20
41	26806	99241	27566	72434	00759	73194	19
42	26873	99238	27635	72365	00762	73127	18
43	26940	99236	27704	72296	00764	73060	17
44	27007	99233	27773	72227	00767	72993	16
45	27073	99231	27842	72158	00769	72927	15
46	27140	99229	27911	72089	00771	72860	14
47	27206	99226	27980	72020	00774	72794	13
48	27273	99224	28049	71951	00776	72727	12
49	27339	99221	28117	71883	00779	72661	11
50	9. 27405	9. 99219	9. 28186	10. 71814	10. 00781	10. 72595	10
51	27471	99217	28254	71746	00783	72529	9
52	27537	99214	28323	71677	00786	72463	8
53	27602	99212	28391	71609	00788	72398	7
54	27668	99209	28459	71541	00791	72332	6
55	27734	99207	28527	71473	00793	72266	5
56	27799	99204	28595	71405	00796	72201	4
57	27864	99202	28662	71338	00798	72136	3
58	27930	99200	28730	71270	00800	72070	2
59	27995	99197	28798	71202	00803	72005	1
60	28060	99195	28865	71135	00805	71940	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

11 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 28060	9. 99195	9. 28865	10. 71135	10. 00805	10. 71940	60
1	28125	99192	28933	71067	00808	71875	59
2	28180	99190	29000	71000	00810	71810	58
3	28254	99187	29067	70933	00813	71746	57
4	28319	99185	29134	70866	00815	71681	56
5	28384	99182	29201	70799	00818	71616	55
6	28448	99180	29268	70732	00820	71552	54
7	28512	99177	29335	70665	00823	71488	53
8	28577	99175	29402	70598	00825	71423	52
9	28641	99172	29468	70532	00828	71359	51
10	9. 28705	9. 99170	9. 29535	10. 70465	10. 00830	10. 71295	50
11	28769	99167	29601	70399	00833	71231	49
12	28833	99165	29668	70332	00835	71167	48
13	28896	99162	29734	70266	00838	71104	47
14	28960	99160	29800	70200	00840	71040	46
15	29024	99157	29866	70134	00843	70976	45
16	29087	99155	29932	70068	00845	70913	44
17	29150	99152	29998	70002	00848	70850	43
18	29214	99150	30064	69936	00850	70786	42
19	29277	99147	30130	69870	00853	70723	41
20	9. 29340	9. 99145	9. 30195	10. 69805	10. 00855	10. 70660	40
21	29403	99142	30261	69739	00858	70597	39
22	29466	99140	30326	69674	00860	70534	38
23	29529	99137	30391	69609	00863	70471	37
24	29591	99135	30457	69543	00865	70409	36
25	29654	99132	30522	69478	00868	70346	35
26	29716	99130	30587	69413	00870	70284	34
27	29779	99127	30652	69348	00873	70221	33
28	29841	99124	30717	69283	00876	70159	32
29	29903	99122	30782	69218	00878	70097	31
30	9. 29966	9. 99119	9. 30846	10. 69154	10. 00881	10. 70034	30
31	30028	99117	30911	69089	00883	69972	29
32	30090	99114	30975	69025	00886	69910	28
33	30151	99112	31040	68960	00888	69849	27
34	30213	99109	31104	68896	00891	69787	26
35	30275	99106	31168	68832	00894	69725	25
36	30336	99104	31233	68767	00896	69664	24
37	30398	99101	31297	68703	00899	69602	23
38	30459	99099	31361	68639	00901	69541	22
39	30521	99096	31425	68575	00904	69479	21
40	9. 30582	9. 99093	9. 31489	10. 68511	10. 00907	10. 69418	20
41	30643	99091	31552	68448	00909	69357	19
42	30704	99088	31616	68384	00912	69296	18
43	30765	99086	31679	68321	00914	69235	17
44	30826	99083	31743	68257	00917	69174	16
45	30887	99080	31806	68194	00920	69113	15
46	30947	99078	31870	68130	00922	69053	14
47	31008	99075	31933	68067	00925	68992	13
48	31068	99072	31996	68004	00928	68932	12
49	31129	99070	32059	67941	00930	68871	11
50	9. 31189	9. 99067	9. 32122	10. 67878	10. 00933	10. 68811	10
51	31250	99064	32185	67815	00936	68750	9
52	31310	99062	32248	67752	00938	68690	8
53	31370	99059	32311	67689	00941	68630	7
54	31430	99056	32373	67627	00944	68570	6
55	31490	99054	32436	67564	00946	68510	5
56	31549	99051	32498	67502	00949	68451	4
57	31609	99048	32561	67439	00952	68391	3
58	31669	99046	32623	67377	00954	68331	2
59	31728	99043	32685	67315	00957	68272	1
60	31788	99040	32747	67253	00960	68212	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XL
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	12 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 31788	9. 99040	9. 32747	10. 67253	10. 00960	10. 68212	60
1	31847	99038	32810	67190	00962	68153	59
2	31907	99035	32872	67128	00965	68093	58
3	31966	99032	32933	67067	00968	68034	57
4	32025	99030	32995	67005	00970	67975	56
5	32084	99027	33057	66943	00973	67916	55
6	32143	99024	33119	66881	00976	67857	54
7	32202	99022	33180	66820	00978	67798	53
8	32261	99019	33242	66758	00981	67739	52
9	32319	99016	33303	66697	00984	67681	51
10	9. 32378	9. 99013	9. 33365	10. 66635	10. 00987	10. 67622	50
11	32437	99011	33426	66574	00989	67563	49
12	32495	99008	33487	66513	00992	67505	48
13	32553	99005	33548	66452	00995	67447	47
14	32612	99002	33609	66391	00998	67388	46
15	32670	99000	33670	66330	01000	67330	45
16	32728	98997	33731	66269	01003	67272	44
17	32786	98994	33792	66208	01006	67214	43
18	32844	98991	33853	66147	01009	67156	42
19	32902	98989	33913	66087	01011	67098	41
20	9. 32960	9. 98986	9. 33974	10. 66026	10. 01014	10. 67040	40
21	33018	98983	34034	65966	01017	66982	39
22	33075	98980	34095	65905	01020	66925	38
23	33133	98978	34155	65845	01022	66867	37
24	33190	98975	34215	65785	01025	66810	36
25	33248	98972	34276	65724	01028	66752	35
26	33305	98969	34336	65664	01031	66695	34
27	33362	98967	34396	65604	01033	66638	33
28	33420	98964	34456	65544	01036	66580	32
29	33477	98961	34516	65484	01039	66523	31
30	9. 33534	9. 98958	9. 34576	10. 65424	10. 01042	10. 66466	30
31	33591	98955	34635	65365	01045	66409	29
32	33647	98953	34695	65305	01047	66353	28
33	33704	98950	34755	65245	01050	66296	27
34	33761	98947	34814	65186	01053	66239	26
35	33818	98944	34874	65126	01056	66182	25
36	33874	98941	34933	65067	01059	66126	24
37	33931	98938	34992	65008	01062	66069	23
38	33987	98936	35051	64949	01064	66013	22
39	34043	98933	35111	64889	01067	65957	21
40	9. 34100	9. 98930	9. 35170	10. 64830	10. 01070	10. 65900	20
41	34156	98927	35229	64771	01073	65844	19
42	34212	98924	35288	64712	01076	65788	18
43	34268	98921	35347	64653	01079	65732	17
44	34324	98919	35405	64595	01081	65676	16
45	34380	98916	35464	64536	01084	65620	15
46	34436	98913	35523	64474	01087	65564	14
47	34491	98910	35581	64419	01090	65509	13
48	34547	98907	35640	64360	01093	65453	12
49	34602	98904	35698	64302	01096	65398	11
50	9. 34658	9. 98911	9. 35757	10. 64243	10. 01099	10. 65342	10
51	34713	98898	35815	64185	01102	65287	9
52	34769	98896	35873	64127	01104	65231	8
53	34824	98893	35931	64069	01107	65176	7
54	34879	98890	35989	64011	01110	65121	6
55	34934	98887	36047	63953	01113	65066	5
56	34989	98884	36105	63895	01116	65011	4
57	35044	98881	36163	63837	01119	64956	3
58	35099	98878	36221	63779	01122	64901	2
59	35154	98875	36279	63721	01125	64846	1
60	35209	98872	36336	63664	01128	64791	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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13 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.35209	9.98872	9.36356	10.63664	10.01128	10.64791	60
1	35263	98869	36394	63606	01151	64737	59
2	35318	98867	36452	63548	01183	64682	58
3	35373	98864	36509	63491	01136	64627	57
4	35427	98861	36566	63434	01139	64573	56
5	35481	98858	36624	63376	01142	64519	55
6	35536	98855	36681	63319	01145	64464	54
7	35590	98852	36738	63262	01148	64410	53
8	35644	98849	36795	63205	01151	64356	52
9	35698	98846	36852	63148	01154	64302	51
10	9.35752	9.98843	9.36909	10.63091	10.01157	10.64248	50
11	35806	98840	36966	63034	01160	64194	49
12	35860	98837	37023	62977	01163	64140	48
13	35914	98834	37080	62920	01166	64086	47
14	35968	98831	37137	62863	01169	64032	46
15	36022	98828	37193	62807	01172	63978	45
16	36075	98825	37250	62750	01175	63925	44
17	36129	98822	37306	62694	01178	63871	43
18	36182	98819	37363	62637	01181	63818	42
19	36236	98816	37419	62581	01184	63764	41
20	9.36289	9.98813	9.37476	10.62524	10.01187	10.63711	40
21	36342	98810	37532	62468	01190	63658	39
22	36395	98807	37588	62412	01193	63605	38
23	36449	98804	37644	62356	01196	63551	37
24	36502	98801	37700	62300	01199	63498	36
25	36555	98798	37756	62244	01202	63445	35
26	36607	98795	37812	62188	01205	63392	34
27	36660	98792	37868	62132	01208	63340	33
28	36713	98789	37924	62076	01211	63287	32
29	36766	98786	37980	62020	01214	63234	31
30	9.36819	9.98783	9.38035	10.61965	10.01217	10.63181	30
31	36871	98780	38091	61909	01220	63129	29
32	36924	98777	38147	61853	01223	63076	28
33	36976	98774	38202	61798	01226	63024	27
34	37028	98771	38257	61743	01229	62972	26
35	37081	98768	38313	61687	01232	62919	25
36	37133	98765	38368	61632	01235	62867	24
37	37185	98762	38423	61577	01238	62815	23
38	37237	98759	38479	61521	01241	62763	22
39	37289	98756	38534	61466	01244	62711	21
40	9.37341	9.98753	9.38589	10.61411	10.01247	10.62659	20
41	37393	98750	38644	61356	01250	62607	19
42	37445	98746	38699	61301	01254	62555	18
43	37497	98743	38754	61246	01257	62503	17
44	37549	98740	38808	61192	01260	62451	16
45	37600	98737	38863	61137	01263	62400	15
46	37652	98734	38918	61082	01266	62348	14
47	37703	98731	38972	61028	01269	62296	13
48	37755	98728	39027	60973	01272	62245	12
49	37806	98725	39082	60918	01275	62194	11
50	9.37858	9.98722	9.39136	10.60864	10.01278	10.62142	10
51	37909	98719	39190	60810	01281	62091	9
52	37960	98715	39245	60755	01285	62040	8
53	38011	98712	39299	60701	01288	61989	7
54	38062	98709	39353	60647	01291	61938	6
55	38113	98706	39407	60593	01294	61887	5
56	38164	98703	39461	60539	01297	61836	4
57	38215	98700	39515	60485	01300	61785	3
58	38266	98697	39569	60431	01303	61734	2
59	38317	98694	39623	60377	01306	61683	1
60	38368	98690	39677	60323	01310	61632	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

13 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

14 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 38368	9. 98690	9. 39677	10. 60323	10. 01310	10. 61632	60
1	38418	98687	39731	60269	01313	61582	59
2	38469	98684	39785	60215	01316	61531	58
3	38519	98681	39838	60162	01319	61481	57
4	38570	98678	39892	60108	01322	61430	56
5	38620	98675	39945	60055	01325	61380	55
6	38670	98671	39999	60001	01329	61330	54
7	38721	98668	40052	59948	01332	61279	53
8	38771	98665	40106	59894	01335	61229	52
9	38821	98662	40159	59841	01338	61179	51
10	9. 38871	9. 98659	9. 40212	10. 59788	10. 01341	10. 61129	50
11	38921	98656	40266	59734	01344	61079	49
12	38971	98652	40319	59681	01348	61029	48
13	39021	98649	40372	59628	01351	60979	47
14	39071	98646	40425	59575	01354	60929	46
15	39121	98643	40478	59522	01357	60879	45
16	39170	98640	40531	59469	01360	60830	44
17	39220	98636	40584	59416	01364	60780	43
18	39270	98633	40636	59364	01367	60730	42
19	39319	98630	40689	59311	01370	60681	41
20	9. 39369	9. 98627	9. 40742	10. 59258	10. 01373	10. 60631	40
21	39418	98623	40795	59205	01377	60582	39
22	39467	98620	40847	59153	01380	60533	38
23	39517	98617	40900	59100	01383	60483	37
24	39566	98614	40952	59048	01386	60434	36
25	39615	98610	41005	58995	01390	60385	35
26	39664	98607	41057	58943	01393	60336	34
27	39713	98604	41109	58891	01396	60287	33
28	39762	98601	41161	58839	01399	60238	32
29	39811	98597	41214	58786	01403	60189	31
30	9. 39860	9. 98594	9. 41266	10. 58734	10. 01406	10. 60140	30
31	39909	98591	41318	58682	01409	60091	29
32	39958	98588	41370	58630	01412	60042	28
33	40006	98584	41422	58578	01416	59994	27
34	40055	98581	41474	58526	01419	59945	26
35	40103	98578	41526	58474	01422	59897	25
36	40152	98574	41578	58422	01426	59848	24
37	40200	98571	41629	58371	01429	59800	23
38	40249	98568	41681	58319	01432	59751	22
39	40297	98565	41733	58267	01435	59703	21
40	9. 40346	9. 98561	9. 41784	10. 58216	10. 01439	10. 59654	20
41	40394	98558	41836	58164	01442	59606	19
42	40442	98555	41887	58113	01445	59558	18
43	40490	98551	41939	58061	01449	59510	17
44	40538	98548	41990	58010	01452	59462	16
45	40586	98545	42041	57959	01455	59414	15
46	40634	98541	42093	57907	01459	59366	14
47	40682	98538	42144	57856	01462	59318	13
48	40730	98535	42195	57805	01465	59270	12
49	40778	98531	42246	57754	01469	59222	11
50	9. 40825	9. 98528	9. 42297	10. 57703	10. 01472	10. 59175	10
51	40873	98525	42348	57652	01475	59127	9
52	40921	98521	42399	57601	01479	59079	8
53	40968	98518	42450	57550	01482	59032	7
54	41016	98515	42501	57499	01485	58984	6
55	41063	98511	42552	57448	01489	58937	5
56	41111	98508	42603	57397	01492	58889	4
57	41158	98505	42653	57347	01495	58842	3
58	41205	98501	42704	57296	01499	58795	2
59	41252	98498	42755	57245	01502	58748	1
60	41300	98494	42805	57195	01506	58700	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	15 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 41300	9. 98494	9. 42805	10. 57195	10. 01506	10. 58700	60
1	41347	98491	42856	57144	01509	58653	59
2	41394	98488	42906	57094	01512	58606	58
3	41441	98484	42957	57043	01516	58559	57
4	41488	98481	43007	56993	01519	58512	56
5	41535	98477	43057	56943	01523	58465	55
6	41582	98474	43108	56892	01526	58418	54
7	41628	98471	43158	56842	01529	58372	53
8	41675	98467	43208	56792	01533	58325	52
9	41722	98464	43258	56742	01536	58278	51
10	9. 41768	9. 98460	9. 43308	10. 56692	10. 01540	10. 58232	50
11	41815	98457	43358	56642	01543	58185	49
12	41861	98453	43408	56592	01547	58139	48
13	41908	98450	43458	56542	01550	58092	47
14	41954	98447	43508	56492	01553	58046	46
15	42001	98443	43558	56442	01557	57999	45
16	42047	98440	43607	56393	01560	57953	44
17	42093	98436	43657	56343	01564	57907	43
18	42140	98433	43707	56293	01567	57860	42
19	42186	98429	43756	56244	01571	57814	41
20	9. 42232	9. 98426	9. 43806	10. 56194	10. 01574	10. 57768	40
21	42278	98422	43855	56145	01578	57722	39
22	42324	98419	43905	56095	01581	57676	38
23	42370	98415	43954	56046	01585	57630	37
24	42416	98412	44004	55996	01588	57584	36
25	42461	98409	44053	55947	01591	57539	35
26	42507	98405	44102	55898	01595	57493	34
27	42553	98402	44151	55849	01598	57447	33
28	42599	98398	44201	55799	01602	57401	32
29	42644	98395	44250	55750	01605	57356	31
30	9. 42690	9. 98391	9. 44299	10. 55701	10. 01609	10. 57310	30
31	42735	98388	44348	55652	01612	57265	29
32	42781	98384	44397	55603	01616	57219	28
33	42826	98381	44446	55554	01619	57174	27
34	42872	98377	44495	55505	01623	57128	26
35	42917	98373	44544	55456	01627	57083	25
36	42962	98370	44592	55408	01630	57038	24
37	43007	98366	44641	55359	01634	56993	23
38	43053	98363	44690	55310	01637	56947	22
39	43098	98359	44738	55262	01641	56902	21
40	9. 43143	9. 98356	9. 44787	10. 55213	10. 01644	10. 56857	20
41	43188	98352	44836	55164	01648	56812	19
42	43233	98349	44884	55116	01651	56767	18
43	43278	98345	44933	55067	01655	56722	17
44	43323	98342	44981	55019	01658	56677	16
45	43367	98338	45029	54971	01662	56633	15
46	43412	98334	45078	54922	01666	56588	14
47	43457	98331	45126	54874	01669	56543	13
48	43502	98327	45174	54826	01673	56498	12
49	43546	98324	45222	54778	01676	56454	11
50	9. 43591	9. 98320	9. 45271	10. 54729	10. 01680	10. 56409	10
51	43635	98317	45319	54681	01683	56365	9
52	43680	98313	45367	54633	01687	56320	8
53	43724	98309	45415	54585	01691	56276	7
54	43769	98306	45463	54537	01694	56231	6
55	43813	98302	45511	54489	01698	56187	5
56	43857	98299	45559	54441	01701	56143	4
57	43901	98295	45606	54394	01705	56099	3
58	43946	98291	45654	54346	01709	56054	2
59	43990	98288	45702	54298	01712	56010	1
60	44034	98284	45750	54250	01716	55966	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

16 Degrees.							
M.	Sine.	Co-Sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 44034	9. 98284	9. 45750	10. 54250	10. 01716	10. 55966	60
1	44078	98281	45797	54203	01719	55922	59
2	44122	98277	45845	54155	01723	55878	58
3	44166	98273	45892	54108	01727	55834	57
4	44210	98270	45940	54060	01730	55790	56
5	44253	98266	45987	54013	01734	55747	55
6	44297	98262	46035	53965	01738	55703	54
7	44341	98259	46082	53918	01741	55659	53
8	44385	98255	46130	53870	01745	55615	52
9	44428	98251	46177	53823	01749	55572	51
10	9. 44472	9. 98248	9. 46224	10. 53776	10. 01752	10. 55528	50
11	44516	98244	46271	53729	01756	55484	49
12	44559	98240	46319	53681	01760	55441	48
13	44602	98237	46366	53634	01763	55398	47
14	44646	98233	46413	53587	01767	55354	46
15	44689	98229	46460	53540	01771	55311	45
16	44733	98226	46507	53493	01774	55267	44
17	44776	98222	46554	53446	01778	55224	43
18	44819	98218	46601	53399	01782	55181	42
19	44862	98215	46648	53352	01785	55138	41
20	9. 44905	9. 98211	9. 46694	10. 53306	10. 01789	10. 55095	40
21	44948	98207	46741	53259	01793	55052	39
22	44992	98204	46788	53212	01796	55008	38
23	45035	98200	46835	53165	01800	54965	37
24	45077	98196	46881	53119	01804	54923	36
25	45120	98192	46928	53072	01808	54880	35
26	45163	98189	46975	53025	01811	54837	34
27	45206	98185	47021	52979	01815	54794	33
28	45249	98181	47068	52932	01819	54751	32
29	45292	98177	47114	52886	01823	54708	31
30	9. 45334	9. 98174	9. 47160	10. 52840	10. 01826	10. 54666	30
31	45377	98170	47207	52793	01830	54623	29
32	45419	98166	47253	52747	01834	54581	28
33	45462	98162	47299	52701	01838	54538	27
34	45504	98159	47346	52654	01841	54496	26
35	45547	98155	47392	52608	01845	54453	25
36	45589	98151	47438	52562	01849	54411	24
37	45632	98147	47484	52516	01853	54368	23
38	45674	98144	47530	52470	01856	54326	22
39	45716	98140	47576	52424	01860	54284	21
40	9. 45758	9. 98136	9. 47622	10. 52378	10. 01864	10. 54242	20
41	45801	98132	47668	52332	01868	54199	19
42	45843	98129	47714	52286	01871	54157	18
43	45886	98125	47760	52240	01875	54115	17
44	45927	98121	47806	52194	01879	54073	16
45	45969	98117	47852	52148	01883	54031	15
46	46011	98113	47897	52103	01887	53989	14
47	46053	98110	47943	52057	01890	53947	13
48	46095	98106	47989	52011	01894	53905	12
49	46136	98102	48035	51965	01898	53864	11
50	9. 46178	9. 98098	9. 48080	10. 51920	10. 01902	10. 53822	10
51	46220	98094	48126	51874	01906	53780	9
52	46262	98090	48171	51829	01910	53738	8
53	46303	98087	48217	51783	01913	53697	7
54	46345	98083	48262	51738	01917	53655	6
55	46386	98079	48307	51693	01921	53614	5
56	46428	98075	48353	51647	01925	53572	4
57	46469	98071	48398	51602	01929	53531	3
58	46511	98067	48443	51557	01933	53489	2
59	46552	98063	48489	51511	01937	53448	1
60	46594	98060	48534	51466	01940	53406	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	17 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.46594	9.98060	9.48534	10.51466	10.01940	10.53406	60
1	46635	98056	48579	51421	01944	53365	59
2	46676	98052	48624	51376	01948	53324	58
3	46717	98048	48669	51331	01952	53283	57
4	46758	98044	48714	51286	01956	53242	56
5	46800	98040	48759	51241	01960	53200	55
6	46841	98036	48804	51196	01964	53159	54
7	46882	98032	48849	51151	01968	53118	53
8	46923	98029	48894	51106	01971	53077	52
9	46964	98025	48939	51061	01975	53036	51
10	9.47003	9.98021	9.48984	10.51016	10.01979	10.52995	50
11	47045	98017	49029	50971	01983	52955	49
12	47086	98018	49073	50927	01987	52914	48
13	47127	98009	49118	50882	01991	52873	47
14	47168	98005	49163	50837	01995	52832	46
15	47209	98001	49207	50793	01999	52791	45
16	47249	97997	49253	50748	02003	52751	44
17	47290	97993	49296	50704	02007	52710	43
18	47330	97989	49341	50659	02011	52670	42
19	47371	97986	49385	50615	02014	52629	41
20	9.47411	9.97982	9.49430	10.50570	10.02018	10.52589	40
21	47452	97978	49474	50526	02022	52548	39
22	47492	97974	49519	50481	02026	52508	38
23	47533	97970	49563	50437	02030	52467	37
24	47573	97966	49607	50393	02034	52427	36
25	47613	97962	49652	50348	02038	52387	35
26	47654	97958	49696	50304	02042	52346	34
27	47694	97954	49740	50260	02046	52306	33
28	47734	97950	49784	50216	02050	52266	32
29	47774	97946	49828	50172	02054	52226	31
30	9.47814	9.97942	9.49872	10.50128	10.02058	10.52186	30
31	47854	97938	49916	50084	02062	52146	29
32	47894	97934	49960	50040	02066	52106	28
33	47934	97930	50004	49996	02070	52066	27
34	47974	97926	50048	49952	02074	52026	26
35	48014	97922	50092	49908	02078	51986	25
36	48054	97918	50136	49864	02082	51946	24
37	48094	97914	50180	49820	02086	51906	23
38	48133	97910	50223	49777	02090	51867	22
39	48173	97906	50267	49733	02094	51827	21
40	9.48213	9.97902	9.50311	10.49689	10.02098	10.51787	20
41	48252	97898	50355	49645	02102	51748	19
42	48292	97894	50398	49600	02106	51708	18
43	48332	97890	50442	49556	02110	51668	17
44	48371	97886	50485	49511	02114	51629	16
45	48411	97882	50529	49471	02118	51589	15
46	48450	97878	50572	49428	02122	51550	14
47	48490	97874	50616	49384	02126	51510	13
48	48529	97870	50659	49341	02130	51471	12
49	48568	97866	50703	49297	02134	51432	11
50	9.48607	9.97861	9.50746	10.49254	10.02139	10.51393	10
51	48647	97857	50789	49211	02143	51353	9
52	48686	97853	50833	49167	02147	51314	8
53	48725	97849	50876	49124	02151	51275	7
54	48764	97845	50919	49081	02155	51236	6
55	48803	97841	50962	49038	02159	51197	5
56	48842	97837	51005	48995	02163	51158	4
57	48881	97833	51048	48952	02167	51119	3
58	48920	97829	51092	48908	02171	51080	2
59	48959	97825	51135	48865	02175	51041	1
60	48998	97821	51178	48822	02179	51002	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

72 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	18 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 48998	9. 97821	9. 51178	10. 48822	10. 02179	10. 51002	60
1	49037	97817	51221	48779	02183	50963	59
2	49076	97812	51264	48736	02188	50924	58
3	49115	97808	51306	48694	02192	50885	57
4	49153	97804	51349	48651	02196	50847	56
5	49192	97800	51392	48608	02200	50808	55
6	49231	97796	51435	48565	02204	50769	54
7	49269	97792	51478	48522	02208	50731	53
8	49308	97788	51520	48480	02212	50692	52
9	49347	97784	51563	48437	02216	50653	51
10	9. 49385	9. 97779	9. 51606	10. 48394	10. 02221	10. 50615	50
11	49424	97775	51648	48352	02225	50576	49
12	49462	97771	51691	48309	02229	50538	48
13	49500	97767	51734	48266	02233	50500	47
14	49539	97763	51776	48224	02237	50461	46
15	49577	97759	51819	48181	02241	50423	45
16	49615	97754	51861	48139	02246	50385	44
17	49654	97750	51903	48097	02250	50346	43
18	49692	97746	51946	48054	02254	50308	42
19	49730	97742	51988	48012	02258	50270	41
20	9. 49768	9. 97738	9. 52031	10. 47969	10. 02262	10. 50232	40
21	49806	97734	52073	47927	02266	50194	39
22	49844	97729	52115	47885	02271	50156	38
23	49882	97725	52157	47843	02275	50118	37
24	49920	97721	52200	47800	02279	50080	36
25	49958	97717	52242	47758	02283	50042	35
26	49996	97713	52284	47716	02287	50004	34
27	50034	97708	52326	47674	02292	49966	33
28	50072	97704	52368	47632	02296	49928	32
29	50110	97700	52410	47590	02300	49890	31
30	9. 50148	9. 97696	9. 52452	10. 47548	10. 02304	10. 49852	30
31	50185	97691	52494	47506	02309	49815	29
32	50223	97687	52536	47464	02313	49777	28
33	50261	97683	52578	47422	02317	49739	27
34	50298	97679	52620	47380	02321	49702	26
35	50336	97674	52661	47339	02326	49664	25
36	50374	97670	52703	47297	02330	49626	24
37	50411	97666	52745	47255	02334	49589	23
38	50449	97662	52787	47213	02338	49551	22
39	50486	97657	52829	47171	02343	49514	21
40	9. 50523	9. 97653	9. 52870	10. 47130	10. 02347	10. 49477	20
41	50561	97649	52912	47088	02351	49439	19
42	50598	97645	52953	47047	02355	49402	18
43	50635	97640	52995	47005	02360	49365	17
44	50673	97636	53037	46963	02364	49327	16
45	50710	97632	53078	46922	02368	49290	15
46	50747	97627	53120	46880	02372	49253	14
47	50784	97623	53161	46839	02377	49216	13
48	50821	97619	53202	46798	02381	49179	12
49	50858	97615	53244	46756	02385	49142	11
50	9. 50896	9. 97610	9. 53285	10. 46715	10. 02390	10. 49104	10
51	50933	97606	53327	46673	02394	49067	9
52	50970	97602	53368	46632	02398	49030	8
53	51007	97597	53409	46591	02403	48993	7
54	51043	97593	53450	46550	02407	48957	6
55	51080	97589	53492	46508	02411	48920	5
56	51117	97584	53533	46467	02416	48883	4
57	51154	97580	53574	46426	02420	48846	3
58	51191	97576	53615	46385	02424	48809	2
59	51227	97571	53656	46344	02429	48773	1
60	51264	97567	53697	46303	02433	48736	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

53

19 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 51264	9. 97567	9. 53697	10. 46803	10. 02433	10. 48736	60
1	51901	97569	53738	46262	02437	48699	59
2	51937	97558	53779	46321	02442	48663	58
3	51374	97554	53820	46180	02446	48626	57
4	51411	97550	53861	46139	02450	48589	56
5	51447	97545	53902	46098	02455	48553	55
6	51484	97541	53943	46057	02459	48516	54
7	51520	97536	53984	46016	02464	48480	53
8	51557	97532	54025	45975	02468	48443	52
9	51593	97528	54065	45935	02472	48407	51
10	9. 51629	9. 97523	9. 54106	10. 45894	10. 02477	10. 48371	50
11	51666	97519	54147	45853	02481	48334	49
12	51702	97515	54187	45813	02485	48298	48
13	51738	97510	54228	45773	02490	48262	47
14	51774	97506	54269	45731	02494	48226	46
15	51811	97501	54309	45691	02499	48189	45
16	51847	97497	54350	45650	02503	48153	44
17	51883	97492	54390	45610	02508	48117	43
18	51919	97488	54431	45569	02512	48081	42
19	51955	97484	54471	45529	02516	48045	41
20	9. 51991	9. 97479	9. 54512	10. 45488	10. 02521	10. 48009	40
21	52027	97475	54552	45448	02525	47973	39
22	52063	97470	54593	45407	02530	47937	38
23	52099	97466	54633	45367	02534	47901	37
24	52135	97461	54673	45327	02539	47865	36
25	52171	97457	54714	45286	02543	47829	35
26	52207	97453	54754	45246	02547	47793	34
27	52242	97448	54794	45206	02552	47758	33
28	52278	97444	54835	45165	02556	47722	32
29	52314	97439	54875	45125	02561	47686	31
30	9. 52350	9. 97435	9. 54915	10. 45085	10. 02565	10. 47650	30
31	52385	97430	54955	45045	02570	47615	29
32	52421	97426	54995	45005	02574	47579	28
33	52456	97421	55035	44965	02579	47544	27
34	52492	97417	55075	44925	02583	47508	26
35	52527	97412	55115	44885	02588	47473	25
36	52563	97408	55155	44845	02592	47437	24
37	52598	97403	55195	44805	02597	47402	23
38	52634	97399	55235	44765	02601	47366	22
39	52669	97394	55275	44725	02606	47331	21
40	9. 52705	9. 97390	9. 55315	10. 44685	10. 02610	10. 47295	20
41	52740	97385	55355	44645	02615	47260	19
42	52776	97381	55395	44605	02619	47225	18
43	52811	97376	55434	44566	02624	47189	17
44	52846	97372	55474	44526	02628	47154	16
45	52881	97367	55514	44486	02633	47119	15
46	52916	97363	55554	44446	02637	47084	14
47	52951	97358	55593	44407	02642	47049	13
48	52986	97353	55633	44367	02647	47014	12
49	53021	97349	55673	44327	02651	46979	11
50	9. 53056	9. 97344	9. 55712	10. 44288	10. 02656	10. 46944	10
51	53092	97340	55752	44248	02660	46908	9
52	53126	97335	55791	44209	02665	46874	8
53	53161	97331	55831	44169	02669	46839	7
54	53196	97326	55870	44130	02674	46804	6
55	53231	97322	55910	44090	02678	46769	5
56	53266	97317	55949	44051	02683	46734	4
57	53301	97312	55989	44011	02688	46699	3
58	53336	97308	56028	43972	02692	46664	2
59	53370	97303	56067	43933	02697	46630	1
60	53405	97299	56107	43893	02701	46595	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

70 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	20 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 53405	9. 97299	9. 56107	10. 43893	10. 02701	10. 46595	60
1	53440	97294	56146	43854	02706	46560	59
2	53475	97289	56185	43815	02711	46525	58
3	53509	97285	56224	43776	02715	46491	57
4	53544	97280	56264	43736	02720	46456	56
5	53578	97276	56303	43697	02724	46422	55
6	53613	97271	56342	43658	02729	46387	54
7	53647	97266	56381	43619	02734	46353	53
8	53682	97262	56420	43580	02738	46318	52
9	53716	97257	56459	43541	02743	46284	51
10	9. 53751	9. 97252	9. 56498	10. 43502	10. 02748	10. 46249	50
11	53785	97248	56537	43463	02752	46215	49
12	53819	97243	56576	43424	02757	46181	48
13	53854	97238	56615	43385	02762	46146	47
14	53888	97234	56654	43346	02766	46112	46
15	53922	97229	56693	43307	02771	46078	45
16	53957	97224	56732	43268	02776	46043	44
17	53991	97220	56771	43229	02780	46009	43
18	54025	97215	56810	43190	02785	45975	42
19	54059	97210	56849	43151	02790	45941	41
20	9. 54093	9. 97206	9. 56887	10. 43113	10. 02794	10. 45907	40
21	54127	97201	56926	43074	02799	45873	39
22	54161	97196	56965	43035	02804	45839	38
23	54195	97192	57004	42996	02808	45805	37
24	54229	97187	57042	42958	02813	45771	36
25	54263	97182	57081	42919	02818	45737	35
26	54297	97178	57120	42880	02822	45703	34
27	54331	97173	57158	42842	02827	45669	33
28	54365	97168	57197	42803	02832	45635	32
29	54399	97163	57235	42765	02837	45601	31
30	9. 54433	9. 97159	9. 57274	10. 42726	10. 02841	10. 45567	30
31	54466	97154	57312	42688	02846	45534	29
32	54500	97149	57351	42649	02851	45500	28
33	54534	97145	57389	42611	02855	45466	27
34	54567	97140	57428	42572	02860	45433	26
35	54601	97135	57466	42534	02865	45399	25
36	54635	97130	57504	42496	02870	45365	24
37	54668	97126	57543	42457	02874	45332	23
38	54702	97121	57581	42419	02879	45298	22
39	54735	97116	57619	42381	02884	45265	21
40	9. 54769	9. 97111	9. 57658	10. 42342	10. 02889	10. 45231	20
41	54802	97107	57696	42304	02893	45198	19
42	54836	97102	57734	42266	02898	45164	18
43	54869	97097	57772	42228	02903	45131	17
44	54903	97092	57810	42190	02908	45097	16
45	54936	97087	57849	42151	02913	45064	15
46	54969	97083	57887	42113	02917	45031	14
47	55003	97078	57925	42075	02922	44997	13
48	55036	97073	57963	42037	02927	44964	12
49	55069	97068	58001	41999	02932	44931	11
50	9. 55102	9. 97063	9. 58039	10. 41901	10. 02937	10. 44898	10
51	55136	97059	58077	41923	02941	44864	9
52	55169	97054	58115	41885	02946	44831	8
53	55202	97049	58153	41847	02951	44798	7
54	55235	97044	58191	41809	02956	44765	6
55	55268	97039	58229	41771	02961	44732	5
56	55301	97035	58267	41733	02965	44699	4
57	55334	97030	58304	41696	02970	44666	3
58	55367	97025	58342	41658	02975	44633	2
59	55400	97020	58380	41620	02980	44600	1
60	55433	97015	58418	41582	02985	44567	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	21-Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 55433	9. 97015	9. 58418	10. 41582	10. 02965	10. 44567	60
1	55466	97010	58455	41545	02990	44534	59
2	55499	97005	58493	41507	02995	44501	58
3	55532	97001	58531	41469	02999	44468	57
4	55564	96996	58569	41431	03004	44436	56
5	55597	96991	58606	41394	03009	44403	55
6	55630	96986	58644	41356	03014	44370	54
7	55663	96981	58681	41319	03019	44337	53
8	55695	96976	58719	41281	03024	44305	52
9	55728	96971	58757	41243	03029	44272	51
10	9. 55761	9. 96966	9. 58794	10. 41206	10. 03034	10. 44239	50
11	55793	96962	58832	41168	03038	44207	49
12	55826	96957	58869	41131	03043	44174	48
13	55858	96952	58907	41093	03048	44142	47
14	55891	96947	58944	41056	03053	44109	46
15	55923	96942	58981	41019	03058	44077	45
16	55956	96937	59019	40981	03063	44044	44
17	55988	96932	59056	40944	03068	44012	43
18	56021	96927	59094	40906	03073	43979	42
19	56053	96922	59131	40869	03078	43947	41
20	9. 56085	9. 96917	9. 59168	10. 40832	10. 03083	10. 43915	40
21	56118	96912	59205	40795	03088	43882	39
22	56150	96907	59243	40757	03093	43850	38
23	56182	96903	59280	40720	03097	43818	37
24	56215	96898	59317	40683	03102	43785	36
25	56247	96893	59354	40646	03107	43753	35
26	56279	96888	59391	40609	03112	43721	34
27	56311	96883	59429	40571	03117	43689	33
28	56343	96878	59466	40534	03122	43657	32
29	56375	96873	59503	40497	03127	43625	31
30	9. 56408	9. 96868	9. 59540	10. 40460	10. 03132	10. 43592	30
31	56440	96863	59577	40423	03137	43560	29
32	56472	96858	59614	40386	03142	43528	28
33	56504	96853	59651	40349	03147	43496	27
34	56536	96848	59688	40312	03152	43464	26
35	56568	96843	59725	40275	03157	43432	25
36	56599	96838	59762	40238	03162	43401	24
37	56631	96833	59799	40201	03167	43369	23
38	56663	96828	59835	40165	03172	43337	22
39	56695	96823	59872	40128	03177	43305	21
40	9. 56727	9. 96818	9. 59909	10. 40091	10. 03182	10. 43273	20
41	56759	96813	59946	40054	03187	43241	19
42	56790	96808	59983	40017	03192	43210	18
43	56822	96803	60019	39981	03197	43178	17
44	56854	96798	60056	39944	03202	43146	16
45	56886	96793	60093	39907	03207	43114	15
46	56917	96788	60130	39870	03212	43083	14
47	56949	96783	60166	39834	03217	43051	13
48	56980	96778	60203	39797	03222	43020	12
49	57012	96772	60240	39760	03228	42988	11
50	9. 57044	9. 96767	9. 60276	10. 39724	10. 03233	10. 42956	10
51	57075	96762	60313	39687	03238	42925	9
52	57107	96757	60349	39651	03243	42893	8
53	57138	96752	60386	39614	03248	42862	7
54	57169	96747	60422	39578	03253	42831	6
55	57201	96742	60459	39541	03258	42799	5
56	57232	96737	60495	39505	03263	42768	4
57	57264	96732	60532	39468	03268	42736	3
58	57295	96727	60568	39432	03273	42705	2
59	57326	96722	60605	39395	03278	42674	1
60	57358	96717	60641	39359	03283	42642	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	22 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 57358	9. 96717	9. 60841	10. 39359	10. 03283	10. 42642	60
1	57389	96711	60677	39323	03289	42611	59
2	57420	96706	60714	39286	03294	42580	58
3	57451	96701	60750	39250	03299	42549	57
4	57482	96696	60786	39214	03304	42518	56
5	57514	96691	60823	39177	03309	42486	55
6	57545	96686	60859	39141	03314	42455	54
7	57576	96681	60893	39105	03319	42424	53
8	57607	96676	60931	39069	03324	42393	52
9	57638	96670	60967	39033	03330	42362	51
10	9. 57669	9. 96665	9. 61034	10. 38996	10. 03335	10. 42331	50
11	57700	96660	61040	38960	03340	42300	49
12	57731	96655	61076	38924	03345	42269	48
13	57762	96650	61112	38888	03350	42238	47
14	57793	96645	61148	38852	03355	42207	46
15	57824	96640	61184	38816	03360	42176	45
16	57854	96634	61220	38780	03366	42146	44
17	57885	96629	61256	38744	03371	42115	43
18	57916	96624	61292	38708	03376	42084	42
19	57947	96619	61328	38672	03381	42053	41
20	9. 57978	9. 96614	9. 61364	10. 38636	10. 03386	10. 42022	40
21	58008	96608	61400	38600	03392	41992	39
22	58039	96603	61436	38564	03397	41961	38
23	58070	96598	61472	38528	03402	41930	37
24	58101	96593	61508	38492	03407	41899	36
25	58131	96588	61544	38456	03412	41869	35
26	58162	96582	61579	38421	03418	41838	34
27	58192	96577	61615	38385	03423	41808	33
28	58223	96572	61651	38349	03428	41777	32
29	58253	96567	61687	38313	03433	41747	31
30	9. 58284	9. 96562	9. 61722	10. 38278	10. 03438	10. 41716	30
31	58314	96556	61758	38242	03444	41686	29
32	58345	96551	61794	38206	03449	41655	28
33	58375	96546	61830	38170	03454	41625	27
34	58406	96541	61865	38135	03459	41594	26
35	58436	96536	61901	38099	03465	41564	25
36	58467	96530	61936	38064	03470	41533	24
37	58497	96525	61972	38028	03475	41503	23
38	58527	96520	62008	37992	03480	41473	22
39	58557	96514	62043	37957	03486	41443	21
40	9. 58588	9. 96509	9. 62079	10. 37921	10. 03491	10. 41412	20
41	58618	96504	62114	37886	03496	41382	19
42	58648	96498	62150	37850	03502	41352	18
43	58678	96493	62185	37815	03507	41322	17
44	58709	96488	62221	37779	03512	41291	16
45	58739	96483	62256	37744	03517	41261	15
46	58769	96477	62292	37708	03523	41231	14
47	58799	96472	62327	37673	03528	41201	13
48	58829	96467	62362	37638	03533	41171	12
49	58859	96461	62398	37602	03539	41141	11
50	9. 58889	9. 96456	9. 62433	10. 37567	10. 03544	10. 41111	10
51	58919	96451	62468	37532	03549	41081	9
52	58949	96445	62504	37496	03555	41051	8
53	58979	96440	62539	37461	03560	41021	7
54	59009	96435	62574	37426	03565	40991	6
55	59039	96429	62609	37391	03571	40961	5
56	59069	96424	62645	37355	03576	40931	4
57	59098	96419	62680	37320	03581	40902	3
58	59128	96413	62715	37285	03587	40872	2
59	59158	96408	62750	37250	03592	40842	1
60	59188	96403	62785	37215	03597	40812	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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23 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 59188	9. 96409	9. 62785	10. 37215	10. 03597	10. 40812	60
1	59218	96397	62820	37180	03603	40782	59
2	59247	96392	62855	37145	03608	40753	58
3	59277	96387	62890	37110	03613	40723	57
4	59307	96381	62926	37074	03619	40693	56
5	59336	96376	62961	37039	03624	40664	55
6	59366	96370	62996	37004	03630	40634	54
7	59396	96365	63031	36969	03635	40604	53
8	59425	96360	63066	36934	03640	40575	52
9	59455	96354	63101	36899	03646	40545	51
10	9. 59484	9. 96349	9. 63135	10. 36865	10. 03651	10. 40516	50
11	59514	96343	63170	36830	03657	40486	49
12	59543	96338	63205	36795	03662	40457	48
13	59573	96333	63240	36760	03667	40427	47
14	59602	96327	63275	36725	03673	40398	46
15	59632	96322	63310	36690	03678	40368	45
16	59661	96316	63345	36655	03684	40339	44
17	59690	96311	63379	36621	03689	40310	43
18	59720	96305	63414	36586	03695	40280	42
19	59749	96300	63449	36551	03700	40251	41
20	9. 59778	9. 96294	9. 63484	10. 36516	10. 03706	10. 40222	40
21	59808	96289	63519	36481	03711	40192	39
22	59837	96284	63553	36447	03716	40163	38
23	59866	96278	63588	36412	03722	40134	37
24	59895	96273	63623	36377	03727	40105	36
25	59924	96267	63657	36343	03733	40076	35
26	59954	96262	63692	36308	03738	40046	34
27	59983	96256	63726	36274	03744	40017	33
28	60012	96251	63761	36239	03749	39988	32
29	60041	96245	63796	36204	03755	39959	31
30	9. 60070	9. 96240	9. 63830	10. 36170	10. 03760	10. 39930	30
31	60099	96234	63865	36135	03766	39901	29
32	60128	96229	63899	36101	03771	39872	28
33	60157	96223	63934	36066	03777	39843	27
34	60186	96218	63968	36032	03782	39814	26
35	60215	96212	64003	35997	03788	39785	25
36	60244	96207	64037	35963	03793	39756	24
37	60273	96201	64072	35928	03799	39727	23
38	60302	96196	64106	35894	03804	39698	22
39	60331	96190	64140	35860	03810	39669	21
40	9. 60359	9. 96185	9. 64175	10. 35825	10. 03815	10. 39641	20
41	60388	96179	64209	35791	03821	39612	19
42	60417	96174	64243	35757	03826	39583	18
43	60446	96168	64278	35722	03832	39554	17
44	60474	96162	64312	35688	03838	39526	16
45	60503	96157	64346	35654	03843	39497	15
46	60532	96151	64381	35619	03849	39468	14
47	60561	96146	64415	35585	03854	39439	13
48	60589	96140	64449	35551	03860	39411	12
49	60618	96135	64483	35517	03865	39382	11
50	9. 60646	9. 96129	9. 64517	10. 35483	10. 03871	10. 39354	10
51	60675	96123	64552	35448	03877	39325	9
52	60704	96118	64586	35414	03882	39296	8
53	60732	96112	64620	35380	03888	39268	7
54	60761	96107	64654	35346	03893	39239	6
55	60789	96101	64688	35312	03899	39211	5
56	60818	96095	64722	35278	03905	39182	4
57	60846	96090	64756	35244	03910	39154	3
58	60875	96084	64790	35210	03916	39125	2
59	60903	96079	64824	35176	03921	39097	1
60	60931	96073	64858	35142	03927	39069	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	24 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.60931	9.96073	9.64858	10.35142	10.03927	10.39069	60
1	60960	96067	64892	35108	03933	39040	59
2	60988	96062	64926	35074	03938	39012	58
3	61016	96056	64960	35040	03944	38984	57
4	61045	96050	64994	35006	03950	38955	56
5	61073	96045	65028	34972	03955	38927	55
6	61101	96039	65062	34938	03961	38899	54
7	61129	96034	65096	34904	03966	38871	53
8	61158	96028	65130	34870	03972	38842	52
9	61186	96022	65164	34836	03978	38814	51
10	9.61214	9.96017	9.65197	10.34803	10.03983	10.38786	50
11	61242	96011	65231	34763	03989	38758	49
12	61270	96005	65265	34735	03995	38730	48
13	61298	96000	65299	34701	04000	38702	47
14	61326	95994	65333	34667	04006	38674	46
15	61354	95988	65366	34634	04012	38646	45
16	61382	95982	65400	34600	04018	38618	44
17	61411	95977	65434	34566	04023	38589	43
18	61438	95971	65467	34533	04029	38562	42
19	61466	95965	65501	34499	04035	38534	41
20	9.61494	9.95960	9.65535	10.34465	10.04040	10.38506	40
21	61522	95954	65568	34432	04046	38478	39
22	61550	95948	65602	34398	04052	38450	38
23	61578	95942	65636	34364	04058	38422	37
24	61606	95937	65669	34331	04063	38394	36
25	61634	95931	65703	34297	04069	38366	35
26	61662	95925	65736	34264	04075	38338	34
27	61689	95920	65770	34230	04080	38311	33
28	61717	95914	65803	34197	04086	38283	32
29	61745	95908	65837	34163	04092	38255	31
30	9.61773	9.95902	9.65870	10.34130	10.04098	10.38227	30
31	61800	95897	65904	34096	04103	38200	29
32	61828	95891	65937	34063	04109	38172	28
33	61856	95885	65971	34029	04115	38144	27
34	61883	95879	66004	33996	04121	38117	26
35	61911	95873	66038	33962	04127	38089	25
36	61939	95868	66071	33929	04132	38061	24
37	61966	95862	66104	33896	04138	38034	23
38	61994	95856	66138	33862	04144	38006	22
39	62021	95850	66171	33829	04150	37979	21
40	9.62049	9.95844	9.66204	10.33796	10.04156	10.37951	20
41	62076	95839	66238	33762	04161	37924	19
42	62104	95833	66271	33729	04167	37896	18
43	62131	95827	66304	33696	04173	37869	17
44	62159	95821	66337	33663	04179	37841	16
45	62186	95815	66371	33629	04185	37814	15
46	62214	95810	66404	33596	04190	37786	14
47	62241	95804	66437	33563	04196	37759	13
48	62268	95798	66470	33530	04202	37732	12
49	62296	95792	66503	33497	04208	37704	11
50	9.62323	9.95786	9.66537	10.33463	10.04214	10.37677	10
51	62350	95780	66570	33430	04220	37650	9
52	62377	95775	66603	33397	04225	37623	8
53	62405	95769	66636	33364	04231	37595	7
54	62432	95763	66669	33331	04237	37568	6
55	62459	95757	66702	33298	04243	37541	5
56	62486	95751	66735	33265	04249	37514	4
57	62513	95745	66768	33232	04255	37487	3
58	62541	95739	66801	33199	04261	37459	2
59	62568	95733	66834	33166	04267	37432	1
60	62595	95728	66867	33133	04272	37405	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	25 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 62593	9. 95728	9. 66867	10. 33133	10. 04272	10. 37405	60
1	62622	95722	66900	33100	04273	37378	59
2	62649	95716	66933	33067	04284	37351	58
3	62676	95710	66966	33034	04290	37324	57
4	62703	95704	66999	33001	04296	37297	56
5	62730	95698	67032	32968	04302	37270	55
6	62757	95692	67065	32935	04308	37243	54
7	62784	95686	67098	32902	04314	37216	53
8	62811	95680	67131	32869	04320	37189	52
9	62838	95674	67163	32837	04326	37162	51
10	9. 62865	9. 95668	9. 67195	10. 32804	10. 04332	10. 37135	50
11	62892	95663	67229	32771	04337	37108	49
12	62918	95657	67262	32738	04343	37082	48
13	62945	95651	67295	32705	04349	37055	47
14	62972	95645	67327	32673	04355	37028	46
15	62999	95639	67360	32640	04361	37001	45
16	63026	95633	67393	32607	04367	36974	44
17	63052	95627	67426	32574	04373	36948	43
18	63079	95621	67458	32542	04379	36921	42
19	63106	95615	67491	32509	04385	36894	41
20	9. 63133	9. 95609	9. 67524	10. 32476	10. 04391	10. 36867	40
21	63159	95603	67556	32444	04397	36841	39
22	63186	95597	67589	32411	04403	36814	38
23	63213	95591	67622	32378	04409	36787	37
24	63239	95585	67654	32346	04415	36761	36
25	63266	95579	67687	32313	04421	36734	35
26	63292	95573	67719	32281	04427	36708	34
27	63319	95567	67752	32248	04433	36681	33
28	63345	95561	67785	32215	04439	36655	32
29	63372	95555	67817	32183	04445	36628	31
30	9. 63398	9. 95549	9. 67850	10. 32150	10. 04451	10. 36602	30
31	63425	95543	67882	32118	04457	36575	29
32	63451	95537	67915	32085	04463	36549	28
33	63478	95531	67947	32053	04469	36522	27
34	63504	95525	67980	32020	04475	36496	26
35	63531	95519	68012	31988	04481	36469	25
36	63557	95513	68044	31956	04487	36443	24
37	63583	95507	68077	31923	04493	36417	23
38	63610	95500	68109	31891	04500	36390	22
39	63636	95494	68142	31858	04505	36364	21
40	9. 63662	9. 95488	9. 68174	10. 31826	10. 04512	10. 36338	20
41	63689	95482	68205	31794	04518	36311	19
42	63715	95476	68239	31761	04524	36285	18
43	63741	95470	68271	31729	04530	36259	17
44	63767	95464	68303	31697	04536	36233	16
45	63794	95458	68336	31664	04542	36206	15
46	63820	95452	68368	31632	04548	36180	14
47	63846	95446	68400	31600	04554	36154	13
48	63872	95440	68432	31568	04560	36128	12
49	63898	95434	68465	31535	04566	36102	11
50	9. 63924	9. 95427	9. 68497	10. 31503	10. 04573	10. 36076	10
51	63950	95421	68529	31471	04579	36050	9
52	63976	95415	68561	31439	04585	36024	8
53	64002	95409	68593	31407	04591	35998	7
54	64028	95403	68626	31374	04597	35972	6
55	64054	95397	68658	31342	04603	35946	5
56	64080	95391	68690	31310	04609	35920	4
57	64106	95384	68722	31278	04616	35894	3
58	64132	95378	68754	31246	04622	35868	2
59	64158	95372	68786	31214	04628	35842	1
60	64184	95366	68818	31182	04634	35816	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	27 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 65705	9. 94988	9. 70717	10. 29283	10. 05012	10. 34295	60
1	65729	94982	70748	29252	05018	34271	59
2	65754	94975	70779	29221	05025	34246	58
3	65779	94969	70810	29190	05031	34221	57
4	65804	94962	70841	29159	05038	34196	56
5	65828	94956	70873	29127	05044	34172	55
6	65853	94949	70904	29096	05051	34147	54
7	65878	94943	70935	29065	05057	34122	53
8	65902	94936	70966	29034	05064	34098	52
9	65927	94930	70997	29003	05070	34073	51
10	9. 65952	9. 94923	9. 71028	10. 28972	10. 05077	10. 34048	50
11	65976	94917	71059	28941	05083	34024	49
12	66001	94911	71090	28910	05089	33999	48
13	66025	94904	71121	28879	05096	33975	47
14	66050	94898	71153	28847	05102	33950	46
15	66075	94891	71184	28816	05109	33925	45
16	66100	94884	71215	28785	05116	33901	44
17	66124	94878	71246	28754	05122	33876	43
18	66148	94871	71277	28723	05129	33852	42
19	66173	94865	71308	28692	05135	33827	41
20	9. 66197	9. 94858	9. 71339	10. 28661	10. 05142	10. 33803	40
21	66221	94852	71370	28630	05148	33779	39
22	66246	94845	71401	28599	05155	33754	38
23	66270	94839	71431	28569	05161	33730	37
24	66295	94832	71462	28538	05168	33705	36
25	66319	94826	71493	28507	05174	33681	35
26	66343	94819	71524	28476	05181	33657	34
27	66368	94813	71555	28445	05187	33632	33
28	66392	94806	71586	28414	05194	33608	32
29	66416	94799	71617	28383	05201	33584	31
30	9. 66441	9. 94793	9. 71648	10. 28352	10. 05207	10. 33559	30
31	66465	94786	71679	28321	05214	33535	29
32	66489	94780	71709	28291	05220	33511	28
33	66513	94773	71740	28260	05227	33487	27
34	66537	94767	71771	28229	05233	33463	26
35	66562	94760	71802	28198	05240	33438	25
36	66586	94753	71833	28167	05247	33414	24
37	66610	94747	71863	28137	05253	33390	23
38	66634	94740	71894	28106	05260	33366	22
39	66658	94734	71925	28075	05266	33342	21
40	9. 66682	9. 94727	9. 71955	10. 28045	10. 05273	10. 33318	20
41	66706	94720	71986	28014	05280	33294	19
42	66731	94714	72017	27983	05286	33269	18
43	66755	94707	72048	27952	05293	33245	17
44	66779	94700	72078	27922	05300	33221	16
45	66803	94694	72109	27891	05306	33197	15
46	66827	94687	72140	27860	05313	33173	14
47	66851	94680	72170	27830	05320	33149	13
48	66875	94674	72201	27799	05326	33125	12
49	66899	94667	72231	27769	05333	33101	11
50	9. 66922	9. 94660	9. 72262	10. 27738	10. 05340	10. 33078	10
51	66946	94654	72293	27707	05346	33054	9
52	66970	94647	72323	27677	05353	33030	8
53	66994	94640	72354	27646	05360	33006	7
54	67018	94634	72384	27616	05366	32982	6
55	67042	94627	72415	27585	05373	32958	5
56	67066	94620	72445	27555	05380	32934	4
57	67090	94614	72476	27524	05386	32910	3
58	67113	94607	72506	27494	05393	32887	2
59	67137	94600	72537	27463	05399	32863	1
60	67161	94593	72567	27433	05407	32839	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

28 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 67161	9. 94593	9. 72567	10. 27433	10. 05407	10. 32839	60
1	67185	94587	72598	27402	05413	32815	59
2	67208	94580	72628	27372	05420	32795	58
3	67232	94573	72659	27341	05427	32768	57
4	67256	94567	72689	27311	05433	32744	56
5	67280	94560	72720	27280	05440	32720	55
6	67303	94553	72750	27250	05447	32697	54
7	67327	94546	72780	27220	05454	32673	53
8	67350	94540	72811	27189	05460	32650	52
9	67374	94533	72841	27159	05467	32626	51
10	9. 67398	9. 94526	9. 72872	10. 27128	10. 05474	10. 32602	50
11	67421	94519	72902	27098	05481	32579	49
12	67445	94513	72932	27068	05487	32555	48
13	67468	94506	72963	27037	05494	32532	47
14	67492	94499	72993	27007	05501	32508	46
15	67515	94492	73023	26977	05508	32485	45
16	67539	94485	73054	26946	05515	32461	44
17	67562	94479	73084	26916	05521	32438	43
18	67586	94472	73114	26886	05528	32414	42
19	67609	94465	73144	26856	05535	32391	41
20	9. 67633	9. 94458	9. 73175	10. 26825	10. 05542	10. 32367	40
21	67656	94451	73205	26795	05549	32344	39
22	67680	94445	73235	26765	05555	32320	38
23	67703	94438	73265	26735	05562	32297	37
24	67726	94431	73295	26705	05569	32274	36
25	67750	94424	73326	26674	05576	32250	35
26	67773	94417	73356	26644	05583	32227	34
27	67796	94410	73386	26614	05590	32204	33
28	67820	94404	73416	26584	05596	32180	32
29	67843	94397	73446	26554	05603	32157	31
30	9. 67866	9. 94390	9. 73476	10. 26524	10. 05610	10. 32134	30
31	67890	94383	73507	26493	05617	32110	29
32	67913	94376	73537	26463	05624	32087	28
33	67936	94369	73567	26433	05631	32064	27
34	67959	94362	73597	26403	05638	32041	26
35	67982	94355	73627	26373	05645	32018	25
36	68006	94349	73657	26343	05651	31994	24
37	68029	94342	73687	26313	05658	31971	23
38	68052	94335	73717	26283	05665	31948	22
39	68075	94328	73747	26253	05672	31925	21
40	9. 68098	9. 94321	9. 73777	10. 26223	10. 05679	10. 31902	20
41	68121	94314	73807	26193	05686	31879	19
42	68144	94307	73837	26163	05693	31856	18
43	68167	94300	73867	26133	05700	31833	17
44	68190	94293	73897	26103	05707	31810	16
45	68213	94286	73927	26073	05714	31787	15
46	68237	94279	73957	26043	05721	31763	14
47	68260	94273	73987	26013	05727	31740	13
48	68283	94266	74017	25983	05734	31717	12
49	68305	94259	74047	25953	05741	31695	11
50	9. 68328	9. 94252	9. 74077	10. 25923	10. 05748	10. 31672	10
51	68351	94245	74107	25893	05755	31649	9
52	68374	94238	74137	25863	05762	31626	8
53	68397	94231	74166	25834	05769	31603	7
54	68420	94224	74196	25804	05776	31580	6
55	68443	94217	74226	25774	05783	31557	5
56	68466	94210	74256	25744	05790	31534	4
57	68489	94203	74286	25714	05797	31511	3
58	68512	94196	74316	25684	05804	31488	2
59	68534	94189	74345	25655	05811	31466	1
60	68557	94182	74375	25625	05818	31443	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	29 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.68557	9.94182	9.74375	10.25625	10.05818	10.31443	60
1	68580	94175	74405	25595	05825	31420	59
2	68603	94168	74435	25565	05832	31397	58
3	68625	94161	74465	25535	05839	31375	57
4	68648	94154	74494	25506	05846	31352	56
5	68671	94147	74524	25476	05853	31329	55
6	68694	94140	74554	25446	05860	31306	54
7	68716	94133	74583	25417	05867	31284	53
8	68739	94126	74613	25387	05874	31261	52
9	68762	94119	74643	25357	05881	31238	51
10	9.68784	9.94112	9.74673	10.25327	10.05888	10.31216	50
11	68807	94105	74702	25298	05895	31193	49
12	68829	94098	74732	25268	05902	31171	48
13	68852	94090	74762	25238	05910	31148	47
14	68875	94083	74791	25209	05917	31125	46
15	68897	94076	74821	25179	05924	31103	45
16	68920	94069	74851	25149	05931	31080	44
17	68942	94062	74880	25120	05938	31058	43
18	68965	94055	74910	25090	05945	31035	42
19	68987	94048	74939	25061	05952	31013	41
20	9.69010	9.94041	9.74969	10.25031	10.05959	10.30990	40
21	69032	94034	74998	25002	05966	30968	39
22	69055	94027	75028	24972	05973	30945	38
23	69077	94020	75058	24942	05980	30923	37
24	69100	94012	75087	24913	05988	30900	36
25	69122	94005	75117	24883	05995	30878	35
26	69144	93998	75146	24854	06002	30856	34
27	69167	93991	75176	24824	06009	30833	33
28	69189	93984	75205	24795	06016	30811	32
29	69212	93977	75235	24765	06023	30788	31
30	9.69234	9.93970	9.75264	10.24736	10.06030	10.30766	30
31	69256	93963	75294	24706	06037	30744	29
32	69279	93955	75323	24677	06045	30721	28
33	69301	93948	75353	24647	06052	30699	27
34	69323	93941	75382	24618	06059	30677	26
35	69345	93934	75411	24589	06066	30655	25
36	69368	93927	75441	24559	06073	30632	24
37	69390	93920	75470	24530	06080	30610	23
38	69412	93912	75500	24500	06088	30588	22
39	69434	93905	75529	24471	06095	30566	21
40	9.69456	9.93898	9.75558	10.24442	10.06102	10.30544	20
41	69479	93891	75588	24412	06109	30521	19
42	69501	93884	75617	24383	06116	30499	18
43	69523	93876	75647	24353	06124	30477	17
44	69545	93869	75676	24324	06131	30455	16
45	69567	93862	75705	24295	06138	30433	15
46	69589	93855	75735	24265	06145	30411	14
47	69611	93847	75764	24236	06153	30389	13
48	69633	93840	75793	24207	06160	30367	12
49	69655	93833	75822	24178	06167	30345	11
50	9.69677	9.93826	9.75852	10.24148	10.06174	10.30323	10
51	69699	93819	75881	24119	06181	30301	9
52	69721	93811	75910	24090	06189	30279	8
53	69743	93804	75939	24061	06196	30257	7
54	69765	93797	75969	24031	06203	30235	6
55	69787	93789	75998	24002	06211	30213	5
56	69809	93782	76027	23973	06218	30191	4
57	69831	93775	76056	23944	06225	30169	3
58	69853	93768	76086	23914	06232	30147	2
59	69875	93760	76115	23885	06240	30125	1
60	69897	93753	76144	23856	06247	30103	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	30 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.69897	9.93753	9.76144	10.23856	10.06247	10.90103	60
1	69919	93746	76173	23827	06254	90081	59
2	69941	93738	76202	23798	06262	90059	58
3	69963	93731	76231	23769	06269	90037	57
4	69984	93724	76261	23739	06276	90016	56
5	70006	93717	76290	23710	06283	99994	55
6	70028	93709	76319	23681	06291	99972	54
7	70050	93702	76348	23652	06298	99950	53
8	70072	93695	76377	23623	06305	99928	52
9	70093	93687	76406	23594	06313	99907	51
10	9.70115	9.93680	9.76435	10.23565	10.06320	10.92885	50
11	70137	93673	76464	23536	06327	92863	49
12	70159	93665	76493	23507	06335	92841	48
13	70180	93658	76522	23478	06342	92820	47
14	70202	93650	76551	23449	06350	92798	46
15	70224	93643	76580	23420	06357	92776	45
16	70245	93636	76609	23391	06364	92755	44
17	70267	93628	76639	23361	06372	92733	43
18	70288	93621	76668	23332	06379	92712	42
19	70310	93614	76697	23303	06386	92690	41
20	9.70332	9.93606	9.76725	10.23275	10.06394	10.92668	40
21	70353	93599	76754	23246	06401	92647	39
22	70375	93591	76783	23217	06409	92625	38
23	70396	93584	76812	23188	06416	92604	37
24	70418	93577	76841	23159	06423	92582	36
25	70439	93569	76870	23130	06431	92561	35
26	70461	93562	76899	23101	06438	92539	34
27	70482	93554	76928	23073	06446	92518	33
28	70504	93547	76957	23043	06453	92496	32
29	70525	93539	76986	23014	06461	92475	31
30	9.70547	9.93532	9.77015	10.22985	10.06468	10.92453	30
31	70568	93525	77044	22956	06475	92432	29
32	70590	93517	77073	22927	06483	92410	28
33	70611	93510	77101	22899	06490	92389	27
34	70633	93502	77130	22870	06498	92367	26
35	70654	93495	77159	22841	06505	92346	25
36	70675	93487	77188	22812	06513	92325	24
37	70697	93480	77217	22783	06520	92303	23
38	70718	93472	77246	22754	06528	92282	22
39	70739	93465	77274	22726	06535	92261	21
40	9.70761	9.93457	9.77303	10.22697	10.06543	10.92239	20
41	70782	93450	77332	22668	06550	92218	19
42	70803	93442	77361	22639	06558	92197	18
43	70824	93435	77390	22610	06565	92176	17
44	70846	93427	77418	22582	06573	92154	16
45	70867	93420	77447	22553	06580	92133	15
46	70888	93412	77476	22524	06588	92112	14
47	70909	93405	77505	22495	06595	92091	13
48	70931	93397	77533	22467	06603	92069	12
49	70952	93390	77562	22438	06610	92048	11
50	9.70973	9.93382	9.77591	10.22409	10.06618	10.92027	10
51	70994	93375	77619	22381	06625	92006	9
52	71015	93367	77648	22352	06633	91985	8
53	71036	93360	77677	22323	06640	91964	7
54	71058	93352	77706	22294	06648	91942	6
55	71079	93344	77734	22266	06656	91921	5
56	71100	93337	77763	22237	06663	91900	4
57	71121	93329	77791	22209	06671	91879	3
58	71142	93322	77820	22180	06678	91858	2
59	71163	93314	77849	22151	06686	91837	1
60	71184	93307	77877	22123	06693	91816	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	31 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 71184	9. 93807	9. 77877	10. 22123	10. 06693	10. 28816	60
1	71205	93299	77906	22094	06701	28795	59
2	71226	93291	77935	22065	06709	28774	58
3	71247	93284	77963	22037	06716	28753	57
4	71268	93276	77992	22008	06724	28732	56
5	71289	93269	78020	21980	06731	28711	55
6	71310	93261	78049	21951	06739	28690	54
7	71331	93253	78077	21923	06747	28669	53
8	71352	93246	78106	21894	06754	28648	52
9	71373	93238	78135	21865	06762	28627	51
10	9. 71393	9. 93230	9. 78163	10. 21837	10. 06770	10. 28607	50
11	71414	93223	78192	21808	06777	28586	49
12	71435	93215	78220	21780	06785	28565	48
13	71456	93207	78249	21751	06793	28544	47
14	71477	93200	78277	21723	06800	28523	46
15	71498	93192	78306	21694	06808	28502	45
16	71519	93184	78334	21666	06816	28481	44
17	71539	93177	78363	21637	06823	28461	43
18	71560	93169	78391	21609	06831	28440	42
19	71581	93161	78419	21581	06839	28419	41
20	9. 71602	9. 93154	9. 78448	10. 21552	10. 06846	10. 28398	40
21	71622	93146	78476	21524	06854	28378	39
22	71643	93138	78505	21495	06862	28357	38
23	71664	93131	78533	21467	06869	28336	37
24	71685	93123	78562	21438	06877	28315	36
25	71705	93115	78590	21410	06885	28295	35
26	71726	93108	78618	21382	06892	28274	34
27	71747	93100	78647	21353	06900	28253	33
28	71767	93092	78675	21325	06908	28233	32
29	71788	93084	78704	21296	06916	28212	31
30	9. 71809	9. 93077	9. 78732	10. 21268	10. 06923	10. 28191	30
31	71829	93069	78760	21240	06931	28171	29
32	71850	93061	78789	21211	06939	28150	28
33	71870	93053	78817	21183	06947	28130	27
34	71891	93046	78845	21155	06954	28109	26
35	71911	93038	78874	21126	06962	28089	25
36	71932	93030	78902	21098	06970	28068	24
37	71952	93022	78930	21070	06978	28048	23
38	71973	93014	78959	21041	06986	28027	22
39	71994	93007	78987	21013	06993	28006	21
40	9. 72014	9. 92999	9. 79015	10. 20985	10. 07001	10. 27986	20
41	72034	92991	79043	20957	07009	27966	19
42	72055	92983	79072	20928	07017	27945	18
43	72075	92976	79100	20900	07024	27925	17
44	72096	92968	79128	20872	07032	27904	16
45	72116	92960	79156	20844	07040	27884	15
46	72137	92952	79185	20815	07048	27863	14
47	72157	92944	79213	20787	07056	27843	13
48	72177	92936	79241	20759	07064	27823	12
49	72198	92929	79269	20731	07071	27802	11
50	9. 72218	9. 92921	9. 79297	10. 20703	10. 07079	10. 27782	10
51	72238	92913	79326	20674	07087	27762	9
52	72259	92905	79354	20646	07095	27741	8
53	72279	92897	79382	20618	07103	27721	7
54	72299	92889	79410	20590	07111	27701	6
55	72320	92881	79438	20562	07119	27680	5
56	72340	92874	79466	20534	07126	27660	4
57	72360	92866	79495	20505	07134	27640	3
58	72381	92858	79523	20477	07142	27619	2
59	72401	92850	79551	20449	07150	27599	1
60	72421	92842	79579	20421	07158	27579	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	32 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 72421	9. 92842	9. 79579	10. 20421	10. 07158	10. 27579	60
1	72441	92834	79607	20393	07166	27559	59
2	72461	92826	79635	20365	07174	27539	58
3	72482	92818	79663	20337	07182	27518	57
4	72502	92810	79691	20309	07190	27498	56
5	72522	92803	79719	20281	07197	27478	55
6	72542	92795	79747	20253	07205	27458	54
7	72562	92787	79776	20224	07213	27438	53
8	72582	92779	79804	20196	07221	27418	52
9	72602	92771	79832	20168	07229	27398	51
10	9. 72622	9. 92763	9. 79860	10. 20140	10. 07237	10. 27378	50
11	72643	92755	79888	20112	07245	27357	49
12	72663	92747	79916	20084	07253	27337	48
13	72683	92739	79944	20056	07261	27317	47
14	72703	92731	79972	20028	07269	27297	46
15	72723	92723	80000	20000	07277	27277	45
16	72743	92715	80028	19972	07285	27257	44
17	72763	92707	80056	19944	07293	27237	43
18	72783	92699	80084	19916	07301	27217	42
19	72803	92691	80112	19888	07309	27197	41
20	9. 72823	9. 92683	9. 80140	10. 19860	10. 07317	10. 27177	40
21	72843	92675	80168	19832	07325	27157	39
22	72863	92667	80195	19805	07333	27137	38
23	72883	92659	80223	19777	07341	27117	37
24	72902	92651	80251	19749	07349	27098	36
25	72922	92643	80279	19721	07357	27078	35
26	72942	92635	80307	19693	07365	27058	34
27	72962	92627	80335	19665	07373	27038	33
28	72982	92619	80363	19637	07381	27018	32
29	73002	92611	80391	19609	07389	26998	31
30	9. 73022	9. 92603	9. 80419	10. 19581	10. 07397	10. 26978	30
31	73041	92595	80447	19553	07405	26959	29
32	73061	92587	80474	19526	07413	26939	28
33	73081	92579	80502	19498	07421	26919	27
34	73101	92571	80530	19470	07429	26899	26
35	73121	92563	80558	19442	07437	26879	25
36	73140	92555	80586	19414	07445	26860	24
37	73160	92546	80614	19386	07454	26840	23
38	73180	92538	80642	19358	07462	26820	22
39	73200	92530	80669	19331	07470	26800	21
40	9. 73219	9. 92522	9. 80697	10. 19303	10. 07478	10. 26781	20
41	73239	92514	80725	19275	07486	26761	19
42	73259	92506	80753	19247	07494	26741	18
43	73278	92498	80781	19219	07502	26722	17
44	73298	92490	80808	19192	07510	26702	16
45	73318	92482	80836	19164	07518	26682	15
46	73337	92473	80864	19136	07527	26663	14
47	73357	92465	80892	19108	07535	26643	13
48	73377	92457	80919	19081	07543	26623	12
49	73396	92449	80947	19053	07551	26604	11
50	9. 73416	9. 92441	9. 80975	10. 19025	10. 07559	10. 26584	10
51	73435	92433	81003	18997	07567	26565	9
52	73455	92425	81030	18970	07575	26545	8
53	73474	92416	81058	18942	07584	26526	7
54	73494	92408	81086	18914	07592	26506	6
55	73513	92400	81113	18887	07600	26487	5
56	73533	92392	81141	18859	07608	26467	4
57	73552	92384	81169	18831	07616	26448	3
58	73572	92376	81196	18804	07624	26428	2
59	73591	92367	81224	18776	07633	26409	1
60	73611	92359	81252	18748	07641	26389	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

57 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

67

M.	83 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 73611	9. 92359	9. 81252	10. 18748	10. 07641	10. 26389	60
1	73630	92351	81279	18721	07649	26370	59
2	73650	92343	81307	18693	07657	26350	58
3	73669	92334	81335	18665	07666	26331	57
4	73689	92326	81362	18638	07674	26311	56
5	73708	92318	81390	18610	07682	26292	55
6	73727	92310	81418	18582	07690	26273	54
7	73747	92302	81445	18555	07698	26253	53
8	73766	92293	81473	18527	07707	26234	52
9	73785	92285	81500	18500	07715	26215	51
10	9. 73805	9. 92277	9. 81528	10. 18472	10. 07723	10. 26195	50
11	73824	92269	81556	18444	07731	26176	49
12	73843	92260	81583	18417	07740	26157	48
13	73863	92252	81611	18389	07748	26137	47
14	73882	92244	81638	18362	07756	26118	46
15	73901	92235	81666	18334	07765	26099	45
16	73921	92227	81693	18307	07773	26079	44
17	73940	92219	81721	18279	07781	26060	43
18	73959	92211	81748	18252	07789	26041	42
19	73978	92202	81776	18224	07798	26022	41
20	9. 73997	9. 92194	9. 81803	10. 18197	10. 07806	10. 26003	40
21	74017	92186	81831	18169	07814	25983	39
22	74036	92177	81858	18142	07823	25964	38
23	74055	92169	81886	18114	07831	25945	37
24	74074	92161	81913	18087	07839	25926	36
25	74093	92152	81941	18059	07848	25907	35
26	74113	92144	81968	18032	07856	25887	34
27	74132	92136	81996	18004	07864	25868	33
28	74151	92127	82023	17977	07873	25849	32
29	74170	92119	82051	17949	07881	25830	31
30	9. 74189	9. 92111	9. 82073	10. 17922	10. 07889	10. 25811	30
31	74208	92102	82106	17894	07898	25792	29
32	74227	92094	82133	17867	07906	25773	28
33	74245	92086	82161	17839	07914	25754	27
34	74265	92077	82188	17812	07923	25735	26
35	74284	92069	82215	17785	07931	25716	25
36	74303	92060	82243	17757	07940	25697	24
37	74322	92052	82270	17730	07948	25678	23
38	74341	92044	82298	17702	07956	25659	22
39	74360	92035	82325	17675	07965	25640	21
40	9. 74379	9. 92027	9. 82352	10. 17648	10. 07973	10. 25621	20
41	74398	92018	82380	17620	07982	25602	19
42	74417	92010	82407	17593	07990	25583	18
43	74436	92002	82435	17565	07998	25564	17
44	74455	91993	82462	17538	08007	25545	16
45	74474	91985	82489	17511	08015	25526	15
46	74493	91976	82517	17483	08024	25507	14
47	74512	91968	82544	17456	08032	25488	13
48	74531	91959	82571	17429	08041	25469	12
49	74549	91951	82599	17401	08049	25451	11
50	9. 74568	9. 91942	9. 82626	10. 17374	10. 08058	10. 25432	10
51	74587	91934	82653	17347	08066	25413	9
52	74606	91925	82681	17319	08075	25394	8
53	74625	91917	82708	17292	08083	25375	7
54	74644	91908	82735	17265	08092	25356	6
55	74662	91900	82762	17238	08100	25338	5
56	74681	91891	82790	17210	08109	25319	4
57	74700	91883	82817	17183	08117	25300	3
58	74719	91874	82844	17156	08126	25281	2
59	74737	91866	82871	17129	08134	25263	1
60	74756	91857	82899	17101	08143	25244	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	34 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.74756	9.91837	9.82899	10.17101	10.08143	10.25244	60
1	74775	91849	82925	17074	08151	25225	59
2	74794	91840	82953	17047	08160	25206	58
3	74812	91832	82983	17020	08168	25188	57
4	74831	91828	83008	16992	08177	25169	56
5	74850	91815	83035	16965	08185	25150	55
6	74868	91806	83062	16938	08194	25132	54
7	74887	91798	83089	16911	08202	25113	53
8	74906	91789	83117	16883	08211	25094	52
9	74924	91781	83144	16856	08219	25076	51
10	9.74943	9.91772	9.83171	10.16829	10.08228	10.25057	50
11	74961	91763	83198	16802	08237	25039	49
12	74980	91755	83225	16775	08245	25020	48
13	74999	91746	83252	16748	08254	25001	47
14	75017	91738	83280	16720	08262	24983	46
15	75036	91729	83307	16693	08271	24964	45
16	75054	91720	83334	16666	08280	24946	44
17	75073	91712	83361	16639	08288	24927	43
18	75091	91703	83388	16612	08297	24909	42
19	75110	91695	83415	16585	08305	24890	41
20	9.75128	9.91686	9.83442	10.16558	10.08314	10.25872	40
21	75147	91677	83470	16530	08323	24853	39
22	75165	91669	83497	16503	08331	24835	38
23	75184	91660	83524	16476	08340	24816	37
24	75202	91651	83551	16449	08349	24798	36
25	75221	91643	83578	16422	08357	24779	35
26	75239	91634	83605	16395	08366	24761	34
27	75258	91625	83632	16368	08375	24742	33
28	75276	91617	83659	16341	08383	24724	32
29	75294	91608	83686	16314	08392	24706	31
30	9.75313	9.91599	9.83713	10.16287	10.08401	10.24687	30
31	75331	91591	83740	16260	08409	24669	29
32	75350	91582	83768	16232	08418	24650	28
33	75368	91573	83795	16205	08427	24632	27
34	75386	91565	83822	16178	08435	24614	26
35	75405	91556	83849	16151	08444	24595	25
36	75423	91547	83876	16124	08453	24577	24
37	75441	91538	83903	16097	08462	24559	23
38	75459	91530	83930	16070	08470	24541	22
39	75478	91521	83957	16043	08479	24522	21
40	9.75496	9.91512	9.83984	10.16016	10.08488	10.24504	20
41	75514	91504	84011	15989	08496	24486	19
42	75533	91495	84038	15962	08505	24467	18
43	75551	91486	84065	15935	08514	24449	17
44	75569	91477	84092	15908	08523	24431	16
45	75587	91469	84119	15881	08531	24413	15
46	75605	91460	84146	15854	08540	24395	14
47	75624	91451	84173	15827	08549	24376	13
48	75642	91442	84200	15800	08558	24358	12
49	75660	91433	84227	15773	08567	24340	11
50	9.75678	9.91425	9.84254	10.15746	10.08575	10.24322	10
51	75696	91416	84280	15720	08584	24304	9
52	75714	91407	84307	15693	08593	24286	8
53	75733	91398	84334	15666	08602	24267	7
54	75751	91389	84361	15639	08611	24249	6
55	75769	91381	84388	15612	08619	24231	5
56	75787	91372	84415	15585	08628	24213	4
57	75805	91363	84442	15558	08637	24195	3
58	75823	91354	84469	15531	08646	24177	2
59	75841	91345	84496	15504	08655	24159	1
60	75859	91337	84523	15477	08664	24141	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	85 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.75859	9.91396	9.84523	10.15477	10.08664	10.24141	60
1	75877	91398	84550	15450	08672	24123	59
2	75895	91319	84576	15421	08681	24105	58
3	75913	91310	84503	15397	08690	24087	57
4	75931	91301	84630	15370	08699	24069	56
5	75949	91292	84657	15343	08708	24051	55
6	75967	91283	84684	15316	08717	24033	54
7	75985	91274	84711	15289	08726	24015	53
8	76003	91266	84738	15262	08734	23997	52
9	76021	91257	84764	15236	08743	23979	51
10	9.76039	9.91248	9.84791	10.15209	10.08752	10.23961	50
11	76057	91239	84818	15182	08761	23943	49
12	76075	91230	84845	15155	08770	23925	48
13	76093	91221	84872	15128	08779	23907	47
14	76111	91212	84899	15101	08788	23889	46
15	76129	91203	84925	15075	08797	23871	45
16	76146	91194	84952	15048	08806	23854	44
17	76164	91185	84979	15021	08815	23836	43
18	76182	91176	85006	14994	08824	23818	42
19	76200	91167	85033	14967	08833	23800	41
20	9.76218	9.91158	9.85059	10.14941	10.08842	10.23782	40
21	76236	91149	85086	14914	08851	23764	39
22	76253	91141	85113	14887	08859	23747	38
23	76271	91132	85140	14860	08868	23729	37
24	76289	91123	85166	14834	08877	23711	36
25	76307	91114	85193	14807	08886	23693	35
26	76324	91105	85220	14780	08895	23676	34
27	76342	91096	85247	14753	08904	23658	33
28	76360	91087	85273	14727	08913	23640	32
29	76378	91078	85300	14700	08922	23622	31
30	9.76395	9.91069	9.85327	10.14673	10.08931	10.23605	30
31	76413	91060	85354	14646	08940	23587	29
32	76431	91051	85380	14620	08949	23569	28
33	76448	91042	85407	14593	08958	23552	27
34	76466	91033	85434	14566	08967	23534	26
35	76484	91023	85460	14540	08977	23516	25
36	76501	91014	85487	14513	08986	23499	24
37	76519	91005	85514	14486	08995	23481	23
38	76537	90996	85540	14460	09004	23463	22
39	76554	90987	85567	14433	09013	23446	21
40	9.76572	9.90978	9.85594	10.14406	10.09022	10.23428	20
41	76590	90969	85620	14380	09031	23410	19
42	76607	90960	85647	14353	09040	23393	18
43	76625	90951	85674	14326	09049	23375	17
44	76642	90942	85700	14300	09058	23358	16
45	76660	90933	85727	14273	09067	23340	15
46	76677	90924	85754	14246	09076	23323	14
47	76695	90915	85780	14220	09085	23305	13
48	76712	90906	85807	14193	09095	23288	12
49	76730	90896	85834	14166	09104	23270	11
50	9.76747	9.90887	9.85830	10.14140	10.09113	10.23253	10
51	76765	90878	85857	14113	09122	23235	9
52	76782	90869	85883	14087	09131	23218	8
53	76800	90860	85910	14060	09140	23200	7
54	76817	90851	85937	14033	09149	23183	6
55	76835	90842	85963	14007	09158	23165	5
56	76852	90833	86020	13980	09168	23148	4
57	76870	90823	86046	13954	09177	23130	3
58	76887	90814	86073	13927	09186	23113	2
59	76904	90805	86100	13900	09195	23096	1
60	76922	90796	86126	13874	09204	23078	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

36 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.76922	9.90795	9.86126	10.13874	10.09204	10.23078	60
1	76939	90787	86153	13847	09213	23061	59
2	76957	90777	86179	13821	09223	23043	58
3	76974	90768	86206	13794	09232	23026	57
4	76991	90759	86232	13768	09241	23009	56
5	77009	90750	86259	13741	09250	22991	55
6	77026	90741	86285	13715	09259	22974	54
7	77043	90731	86312	13688	09269	22957	53
8	77061	90722	86338	13662	09278	22939	52
9	77078	90713	86365	13635	09287	22922	51
10	9.77095	9.90704	9.86392	10.13608	10.09296	10.22905	50
11	77112	90694	86418	13582	09306	22888	49
12	77130	90685	86445	13555	09315	22870	48
13	77147	90676	86471	13529	09324	22853	47
14	77164	90667	86498	13502	09333	22836	46
15	77181	90657	86524	13476	09343	22819	45
16	77199	90648	86551	13449	09352	22801	44
17	77216	90639	86577	13423	09361	22784	43
18	77233	90630	86603	13397	09370	22767	42
19	77250	90620	86630	13370	09380	22750	41
20	9.77268	9.90611	9.86656	10.13344	10.09389	10.22732	40
21	77285	90602	86683	13317	09398	22715	39
22	77302	90592	86709	13291	09408	22698	38
23	77319	90583	86736	13264	09417	22681	37
24	77336	90574	86762	13238	09426	22664	36
25	77353	90565	86789	13211	09435	22647	35
26	77370	90555	86815	13185	09445	22630	34
27	77387	90546	86842	13158	09454	22613	33
28	77405	90537	86868	13132	09463	22595	32
29	77422	90527	86894	13106	09473	22578	31
30	9.77439	9.90518	9.86921	10.13079	10.09482	10.22561	30
31	77456	90509	86947	13053	09491	22544	29
32	77473	90499	86974	13026	09501	22527	28
33	77490	90490	87000	13000	09510	22510	27
34	77507	90480	87027	12973	09520	22493	26
35	77524	90471	87053	12947	09529	22476	25
36	77541	90462	87079	12921	09538	22459	24
37	77558	90452	87106	12894	09548	22442	23
38	77575	90443	87132	12868	09557	22425	22
39	77592	90434	87158	12842	09566	22408	21
40	9.77609	9.90424	9.87185	10.12815	10.09576	10.22391	20
41	77626	90415	87211	12789	09585	22374	19
42	77643	90405	87238	12762	09595	22357	18
43	77660	90395	87264	12736	09604	22340	17
44	77677	90386	87290	12710	09614	22323	16
45	77694	90377	87317	12683	09623	22306	15
46	77711	90368	87343	12657	09632	22289	14
47	77727	90358	87369	12631	09642	22272	13
48	77744	90349	87396	12604	09651	22256	12
49	77761	90339	87422	12578	09661	22239	11
50	9.77778	9.90330	9.87448	10.12552	10.09670	10.22222	10
51	77795	90320	87475	12525	09680	22205	9
52	77812	90311	87501	12499	09689	22188	8
53	77829	90301	87527	12473	09699	22171	7
54	77846	90292	87554	12446	09708	22154	6
55	77862	90282	87580	12420	09718	22138	5
56	77879	90273	87606	12394	09727	22121	4
57	77896	90263	87633	12367	09737	22104	3
58	77913	90254	87659	12341	09746	22087	2
59	77930	90244	87685	12315	09756	22070	1
60	77946	90235	87711	12289	09765	22054	0
Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.	

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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M.	37 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 77946	9. 90235	9. 87711	10. 12289	10. 09765	10. 22054	60
1	77963	90225	87738	12262	09775	22037	59
2	77980	90216	87764	12236	09784	22020	58
3	77997	90206	87790	12210	09794	22003	57
4	78013	90197	87817	12183	09803	21987	56
5	78030	90187	87843	12157	09813	21970	55
6	78047	90178	87869	12131	09822	21953	54
7	78063	90168	87895	12105	09832	21937	53
8	78080	90159	87922	12078	09841	21920	52
9	78097	90149	87948	12052	09851	21903	51
10	9. 78113	9. 90139	9. 87974	10. 12026	10. 09861	10. 21887	50
11	78130	90130	88000	12000	09870	21870	49
12	78147	90120	88027	11973	09880	21853	48
13	78163	90111	88053	11947	09889	21837	47
14	78180	90101	88079	11921	09899	21820	46
15	78197	90091	88105	11895	09909	21803	45
16	78213	90082	88131	11869	09918	21787	44
17	78230	90072	88158	11842	09928	21770	43
18	78246	90063	88184	11816	09937	21754	42
19	78263	90053	88210	11790	09947	21737	41
20	9. 78280	9. 90043	9. 88236	10. 11764	10. 09957	10. 21720	40
21	78296	90034	88262	11738	09966	21704	39
22	78313	90024	88289	11711	09976	21687	38
23	78329	90014	88315	11685	09986	21671	37
24	78346	90005	88341	11659	09995	21654	36
25	78362	89995	88367	11633	10005	21638	35
26	78379	89985	88393	11607	10015	21621	34
27	78395	89976	88420	11580	10024	21605	33
28	78412	89966	88446	11554	10034	21588	32
29	78428	89956	88472	11528	10044	21572	31
30	9. 78445	9. 89947	9. 88498	10. 11502	10. 10053	10. 21555	30
31	78461	89937	88524	11476	10063	21539	29
32	78478	89927	88550	11450	10073	21522	28
33	78494	89918	88576	11424	10082	21506	27
34	78510	89908	88603	11397	10092	21490	26
35	78527	89898	88629	11371	10102	21473	25
36	78543	89888	88655	11345	10112	21457	24
37	78560	89879	88681	11319	10121	21440	23
38	78576	89869	88707	11293	10131	21424	22
39	78592	89859	88733	11267	10141	21408	21
40	9. 78609	9. 89849	9. 88759	10. 11241	10. 10151	10. 21391	20
41	78625	89840	88786	11214	10160	21375	19
42	78642	89830	88812	11188	10170	21358	18
43	78658	89820	88838	11162	10180	21342	17
44	78674	89810	88864	11136	10190	21326	16
45	78691	89801	88890	11110	10199	21309	15
46	78707	89791	88916	11084	10209	21293	14
47	78723	89781	88942	11058	10219	21277	13
48	78739	89771	88968	11032	10229	21261	12
49	78756	89761	88994	11006	10239	21244	11
50	9. 78772	9. 89752	9. 89020	10. 10980	10. 10248	10. 21228	10
51	78788	89742	89046	10954	10258	21212	9
52	78805	89732	89073	10927	10268	21195	8
53	78821	89722	89099	10901	10278	21179	7
54	78837	89712	89125	10875	10288	21163	6
55	78853	89702	89151	10849	10298	21147	5
56	78869	89693	89177	10823	10307	21131	4
57	78886	89683	89203	10797	10317	21114	3
58	78902	89673	89229	10771	10327	21098	2
59	78918	89663	89255	10745	10337	21082	1
60	78934	89653	89281	10719	10347	21066	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

52 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

38 Degrees.							
M.	Sine.	Co-Sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 78934	9. 89653	9. 89281	10. 10719	10. 10347	10. 21066	60
1	78950	89549	89307	10693	10357	21050	59
2	78967	89638	89333	10667	10367	21033	58
3	78983	89624	89359	10641	10376	21017	57
4	78999	89614	89385	10615	10386	21001	56
5	79015	89604	89411	10589	10396	20985	55
6	79031	89594	89437	10563	10406	20969	54
7	79047	89584	89463	10537	10416	20953	53
8	79063	89574	89489	10511	10426	20937	52
9	79079	89564	89515	10485	10436	20921	51
10	9. 79095	9. 89554	9. 89541	10. 10459	10. 10446	10. 20905	50
11	79111	89544	89567	10433	10456	20889	49
12	79128	89534	89593	10407	10466	20872	48
13	79144	89524	89619	10381	10476	20856	47
14	79160	89514	89645	10355	10486	20840	46
15	79176	89504	89671	10329	10496	20824	45
16	79192	89495	89697	10303	10505	20808	44
17	79208	89485	89723	10277	10515	20792	43
18	79224	89475	89749	10251	10525	20776	42
19	79240	89465	89775	10225	10535	20760	41
20	9. 79256	9. 89455	9. 89801	10. 10199	10. 10545	10. 20744	40
21	79272	89445	89827	10173	10555	20728	39
22	79288	89435	89853	10147	10565	20712	38
23	79304	89425	89879	10121	10575	20696	37
24	79319	89415	89905	10095	10585	20681	36
25	79335	89405	89931	10069	10595	20665	35
26	79351	89395	89957	10043	10605	20649	34
27	79367	89385	89983	10017	10615	20633	33
28	79383	89375	90009	99991	10625	20617	32
29	79399	89364	90035	99965	10636	20601	31
30	9. 79415	9. 89354	9. 90061	10. 09939	10. 10646	10. 20585	30
31	79431	89344	90086	99914	10656	20569	29
32	79447	89334	90112	99888	10666	20553	28
33	79463	89324	90138	99862	10676	20537	27
34	79478	89314	90164	99836	10686	20522	26
35	79494	89304	90190	99810	10696	20506	25
36	79510	89294	90216	99784	10706	20490	24
37	79526	89284	90242	99758	10716	20474	23
38	79542	89274	90268	99732	10726	20458	22
39	79558	89264	90294	99706	10736	20442	21
40	9. 79573	9. 89254	9. 90320	10. 09680	10. 10746	10. 20427	20
41	79589	89244	90346	99554	10756	20411	19
42	79605	89233	90371	99629	10767	20395	18
43	79621	89223	90397	99603	10777	20379	17
44	79636	89213	90423	99577	10787	20364	16
45	79652	89203	90449	99551	10797	20348	15
46	79668	89193	90475	99525	10807	20332	14
47	79684	89183	90501	99499	10817	20316	13
48	79699	89173	90527	99473	10827	20301	12
49	79715	89162	90553	99447	10838	20285	11
50	9. 79731	9. 89152	9. 90578	10. 09422	10. 10848	10. 20269	10
51	79746	89142	90604	99395	10858	20254	9
52	79762	89132	90630	99370	10868	20238	8
53	79778	89122	90656	99344	10878	20222	7
54	79793	89112	90682	99318	10888	20207	6
55	79809	89101	90708	99292	10899	20191	5
56	79825	89091	90734	99266	10909	20175	4
57	79840	89081	90759	99241	10919	20160	3
58	79856	89071	90785	99215	10929	20144	2
59	79872	89060	90811	99189	10940	20128	1
60	79887	89050	90837	99163	10950	20113	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.
51 Degrees.							

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

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39 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 79887	9. 89050	9. 90837	10. 09163	10. 10950	10. 20118	60
1	79903	89040	90863	09137	10960	20097	59
2	79918	89030	90889	09111	10970	20082	58
3	79934	89020	90914	09086	10980	20066	57
4	79950	89009	90940	09060	10991	20050	56
5	79965	88999	90966	09034	11001	20035	55
6	79981	88989	90992	09008	11011	20019	54
7	79996	88978	91018	08982	11022	20004	53
8	80012	88968	91043	08957	11032	19988	52
9	80027	88958	91069	08931	11042	19973	51
10	9. 80043	9. 88948	9. 91095	10. 08905	10. 11052	10. 19957	50
11	80058	88937	91121	08879	11063	19942	49
12	80074	88927	91147	08853	11073	19926	48
13	80089	88917	91172	08828	11083	19911	47
14	80105	88906	91198	08802	11094	19895	46
15	80120	88896	91224	08776	11104	19880	45
16	80136	88886	91250	08750	11114	19864	44
17	80151	88875	91276	08724	11125	19849	43
18	80166	88865	91301	08699	11135	19834	42
19	80182	88855	91327	08673	11145	19818	41
20	9. 80197	9. 88844	9. 91353	10. 08647	10. 11156	10. 19803	40
21	80213	88834	91379	08621	11166	19787	39
22	80228	88824	91404	08596	11176	19772	38
23	80244	88813	91430	08570	11187	19756	37
24	80259	88803	91456	08544	11197	19741	36
25	80274	88793	91482	08518	11207	19726	35
26	80290	88782	91507	08493	11218	19710	34
27	80305	88772	91533	08467	11228	19695	33
28	80320	88761	91559	08441	11239	19680	32
29	80336	88751	91585	08415	11249	19664	31
30	9. 80351	9. 88741	9. 91610	10. 08390	10. 11259	10. 19649	30
31	80366	88730	91636	08364	11270	19634	29
32	80382	88720	91662	08338	11280	19618	28
33	80397	88709	91688	08312	11291	19603	27
34	80412	88699	91713	08287	11301	19588	26
35	80428	88688	91739	08261	11312	19572	25
36	80443	88678	91765	08235	11322	19557	24
37	80458	88668	91791	08209	11332	19542	23
38	80473	88657	91816	08184	11343	19527	22
39	80489	88647	91842	08158	11353	19511	21
40	9. 80504	9. 88636	9. 91868	10. 08132	10. 11364	10. 19496	20
41	80519	88626	91893	08107	11374	19481	19
42	80534	88613	91919	08081	11385	19466	18
43	80550	88605	91945	08055	11395	19450	17
44	80565	88594	91971	08029	11406	19435	16
45	80580	88584	91996	08004	11416	19420	15
46	80595	88573	92022	07978	11427	19405	14
47	80610	88563	92048	07952	11437	19390	13
48	80625	88552	92073	07927	11448	19375	12
49	80641	88542	92099	07901	11458	19359	11
50	9. 80656	9. 88531	9. 92125	10. 07875	10. 11469	10. 19344	10
51	80671	88521	92150	07850	11479	19329	9
52	80686	88510	92176	07824	11490	19314	8
53	80701	88499	92202	07798	11501	19299	7
54	80716	88489	92227	07773	11511	19284	6
55	80731	88478	92253	07747	11522	19269	5
56	80746	88468	92279	07721	11532	19254	4
57	80762	88457	92304	07696	11543	19238	3
58	80777	88447	92330	07670	11553	19223	2
59	80792	88436	92356	07644	11564	19208	1
50	80807	88425	92381	07619	11575	19193	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

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41 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9.81694	9.87778	9.93916	10.06084	10.12222	10.18306	60
1	81709	87767	93942	06058	12233	18291	59
2	81723	87756	93967	06033	12244	18277	58
3	81738	87745	93993	06007	12255	18263	57
4	81752	87734	94018	05982	12266	18248	56
5	81767	87723	94044	05956	12277	18233	55
6	81781	87712	94069	05931	12288	18219	54
7	81796	87701	94095	05905	12299	18204	53
8	81810	87690	94120	05880	12310	18190	52
9	81825	87679	94146	05854	12321	18175	51
10	9.81839	9.87668	9.94171	10.05829	10.12332	10.18161	50
11	81854	87657	94197	05803	12343	18146	49
12	81868	87646	94222	05778	12354	18132	48
13	81882	87635	94248	05752	12365	18118	47
14	81897	87624	94273	05727	12376	18103	46
15	81911	87613	94299	05701	12387	18089	45
16	81926	87601	94324	05676	12399	18074	44
17	81940	87590	94350	05650	12410	18060	43
18	81954	87579	94375	05625	12421	18046	42
19	81969	87568	94401	05599	12432	18031	41
20	9.81983	9.87557	9.94426	10.05574	10.12443	10.18017	40
21	81998	87546	94452	05548	12454	18002	39
22	82012	87535	94477	05523	12465	17988	38
23	82026	87524	94503	05497	12476	17974	37
24	82041	87513	94528	05472	12487	17959	36
25	82055	87501	94554	05446	12499	17945	35
26	82069	87490	94579	05421	12510	17931	34
27	82084	87479	94604	05396	12521	17916	33
28	82098	87468	94630	05370	12532	17902	32
29	82112	87457	94655	05345	12543	17888	31
30	9.82126	9.87446	9.94681	10.05319	10.12554	10.17874	30
31	82141	87434	94706	05294	12566	17859	29
32	82155	87423	94732	05268	12577	17845	28
33	82169	87412	94757	05243	12588	17831	27
34	82184	87401	94783	05217	12599	17816	26
35	82198	87390	94808	05192	12610	17802	25
36	82212	87378	94834	05166	12622	17788	24
37	82226	87367	94859	05141	12633	17774	23
38	82240	87356	94884	05116	12644	17760	22
39	82255	87345	94910	05090	12655	17745	21
40	9.82269	9.87334	9.94935	10.05065	10.12666	10.17731	20
41	82283	87322	94961	05039	12678	17717	19
42	82297	87311	94986	05014	12689	17703	18
43	82311	87300	95012	04988	12700	17689	17
44	82326	87288	95037	04963	12712	17674	16
45	82340	87277	95062	04938	12723	17660	15
46	82354	87266	95088	04912	12734	17646	14
47	82368	87255	95113	04887	12745	17632	13
48	82382	87243	95139	04861	12757	17618	12
49	82396	87232	95164	04836	12768	17604	11
50	9.82410	9.87221	9.95190	10.04810	10.12779	10.17590	10
51	82424	87209	95215	04785	12791	17576	9
52	82439	87198	95240	04760	12802	17561	8
53	82453	87187	95266	04734	12813	17547	7
54	82467	87175	95291	04709	12825	17533	6
55	82481	87164	95317	04683	12836	17519	5
56	82495	87153	95342	04658	12847	17505	4
57	82509	87141	95368	04632	12859	17491	3
58	82523	87130	95393	04607	12870	17477	2
59	82537	87119	95418	04582	12881	17463	1
60	82551	87107	95444	04556	12893	17449	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.
48 Degrees.							

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

42 Degrees.						
Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
9. 82551	9. 87107	9. 95444	10. 04556	10. 12895	10. 17449	60
82565	87096	95469	04531	12904	17435	59
82579	87085	95495	04505	12915	17421	58
82593	87073	95520	04480	12927	17407	57
82607	87062	95545	04455	12938	17393	56
82621	87050	95571	04429	12950	17379	55
82635	87039	95596	04404	12961	17365	54
82649	87028	95622	04378	12972	17351	53
82663	87016	95647	04353	12984	17337	52
82677	87005	95672	04328	12995	17323	51
9. 82691	9. 86993	9. 95698	10. 04302	10. 13007	10. 17309	50
82705	86982	95723	04277	13018	17295	49
82719	86970	95748	04252	13030	17281	48
82733	86959	95774	04226	13041	17267	47
82747	86947	95799	04201	13053	17253	46
82761	86936	95825	04175	13064	17239	45
82775	86924	95850	04150	13076	17225	44
82788	86913	95875	04125	13087	17212	43
82802	86902	95901	04099	13098	17198	42
82816	86890	95926	04074	13110	17184	41
9. 82830	9. 86879	9. 95952	10. 04048	10. 13121	10. 17170	40
82844	86867	95977	04023	13133	17156	39
82858	86855	96002	03998	13145	17142	38
82872	86844	96028	03972	13156	17128	37
82885	86832	96053	03947	13168	17115	36
82899	86821	96078	03922	13179	17101	35
82913	86809	96104	03896	13191	17087	34
82927	86798	96129	03871	13202	17073	33
82941	86786	96155	03845	13214	17059	32
82955	86775	96180	03820	13225	17045	31
9. 82968	9. 86763	9. 96205	10. 03795	10. 13237	10. 17032	30
82982	86752	96231	03769	13248	17018	29
82996	86740	96256	03744	13260	17004	28
83010	86728	96281	03719	13272	16990	27
83023	86717	96307	03693	13283	16977	26
83037	86705	96332	03668	13295	16963	25
83051	86694	96357	03643	13306	16949	24
83065	86682	96383	03617	13318	16935	23
83078	86670	96408	03592	13330	16922	22
83092	86659	96433	03567	13341	16908	21
9. 83106	9. 86647	9. 96459	10. 03541	10. 13353	10. 16894	20
83120	86635	96484	03516	13365	16880	19
83133	86624	96510	03490	13376	16867	18
83147	86612	96535	03465	13388	16853	17
83161	86600	96560	03440	13400	16839	16
83174	86589	96586	03414	13411	16826	15
83188	86577	96611	03389	13423	16812	14
83202	86565	96636	03364	13435	16798	13
83215	86554	96662	03338	13446	16785	12
83229	86542	96687	03313	13458	16771	11
9. 83242	9. 86530	9. 96712	10. 03288	10. 13470	10. 16758	10
83256	86518	96738	03262	13482	16744	9
83270	86507	96763	03237	13493	16730	8
83283	86495	96788	03213	13505	16717	7
83297	86483	96814	03186	13517	16703	6
83310	86472	96839	03161	13528	16690	5
83324	86460	96864	03136	13540	16676	4
83338	86448	96890	03110	13552	16663	3
83351	86436	96915	03085	13564	16649	2
83365	86425	96940	03060	13575	16635	1
83378	86413	96966	03034	13587	16622	0
Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

43 Degrees.							
M.	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 83378	9. 86413	9. 96966	10. 09034	10. 13587	10. 16622	60
1	83392	86401	96991	03009	13599	16608	59
2	83405	86389	97016	02984	13611	16595	58
3	83419	86377	97042	02958	13623	16581	57
4	83432	86366	97067	02933	13634	16568	56
5	83446	86354	97092	02908	13646	16554	55
6	83459	86342	97118	02882	13658	16541	54
7	83473	86330	97143	02857	13670	16527	53
8	83486	86318	97168	02832	13682	16514	52
9	83500	86306	97193	02807	13694	16500	51
10	9. 83513	9. 86295	9. 97219	10. 02781	10. 13705	10. 16487	50
11	83527	86283	97244	02756	13717	16473	49
12	83540	86271	97269	02731	13729	16460	48
13	83554	86259	97295	02705	13741	16446	47
14	83567	86247	97320	02680	13753	16433	46
15	83581	86235	97345	02655	13765	16419	45
16	83594	86223	97371	02629	13777	16406	44
17	83608	86211	97396	02604	13789	16392	43
18	83621	86200	97421	02579	13800	16379	42
19	83634	86188	97447	02553	13812	16366	41
20	9. 83648	9. 86176	9. 97472	10. 02528	10. 13824	10. 16352	40
21	83661	86164	97497	02503	13836	16339	39
22	83674	86152	97523	02477	13848	16326	38
23	83688	86140	97548	02452	13860	16312	37
24	83701	86128	97573	02427	13872	16299	36
25	83715	86116	97598	02402	13884	16285	35
26	83728	86104	97624	02376	13896	16272	34
27	83741	86092	97649	02351	13908	16259	33
28	83755	86080	97674	02326	13920	16245	32
29	83768	86068	97700	02300	13932	16232	31
30	9. 83781	9. 86056	9. 97725	10. 02275	10. 13944	10. 16219	30
31	83795	86044	97750	02250	13956	16205	29
32	83808	86032	97776	02224	13968	16192	28
33	83821	86020	97801	02199	13980	16179	27
34	83834	86008	97826	02174	13992	16166	26
35	83848	85996	97851	02149	14004	16152	25
36	83861	85984	97877	02123	14016	16139	24
37	83874	85972	97902	02098	14028	16126	23
38	83887	85960	97927	02073	14040	16113	22
39	83901	85948	97953	02047	14052	16099	21
40	9. 83914	9. 85936	9. 97978	10. 02022	10. 14064	10. 16086	20
41	83927	85924	98003	01997	14076	16073	19
42	83940	85912	98029	01971	14088	16060	18
43	83954	85900	98054	01946	14100	16046	17
44	83967	85888	98079	01921	14112	16033	16
45	83980	85876	98104	01896	14124	16020	15
46	83993	85864	98130	01870	14136	16007	14
47	84006	85851	98155	01845	14149	15994	13
48	84020	85839	98180	01820	14161	15980	12
49	84033	85827	98206	01794	14173	15967	11
50	9. 84046	9. 85815	9. 98231	10. 01769	10. 14185	10. 15954	10
51	84059	85803	98256	01744	14197	15941	9
52	84072	85791	98281	01719	14209	15928	8
53	84085	85779	98307	01693	14221	15915	7
54	84098	85766	98332	01668	14234	15902	6
55	84112	85754	98357	01643	14246	15888	5
56	84125	85742	98383	01617	14258	15875	4
57	84138	85730	98408	01592	14270	15862	3
58	84151	85718	98433	01567	14282	15849	2
59	84164	85706	98458	01542	14294	15836	1
60	84177	85693	98484	01516	14307	15823	0
Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.		M.

46 Degrees.

TABLE XI.
LOGARITHMIC SINES, TANGENTS, AND SECANTS.

M.	44 Degrees.						
	Sine.	Co-sine.	Tangent.	Co-tangent.	Secant.	Co-secant.	
0	9. 84177	9. 85693	9. 98484	10. 01516	10. 14307	10. 15823	60
1	84190	85681	98509	01491	14319	15810	59
2	84203	85669	98534	01466	14331	15797	58
3	84216	85657	98560	01440	14343	15784	57
4	84229	85645	98585	01415	14355	15771	56
5	84242	85632	98610	01390	14368	15758	55
6	84255	85620	98635	01365	14380	15745	54
7	84269	85608	98661	01339	14392	15731	53
8	84282	85596	98686	01314	14404	15718	52
9	84295	85583	98711	01289	14417	15705	51
10	9. 84308	9. 85571	9. 98737	10. 01263	10. 14429	10. 15692	50
11	84321	85559	98762	01238	14441	15679	49
12	84334	85547	98787	01213	14453	15666	48
13	84347	85534	98812	01188	14466	15653	47
14	84360	85522	98838	01162	14478	15640	46
15	84373	85510	98863	01137	14490	15627	45
16	84385	85497	98888	01112	14503	15615	44
17	84398	85485	98913	01087	14515	15602	43
18	84411	85473	98939	01061	14527	15589	42
19	84424	85460	98964	01036	14540	15576	41
20	9. 84437	9. 85448	9. 98989	10. 01011	10. 14552	10. 15563	40
21	84450	85436	99015	00985	14564	15550	39
22	84463	85423	99040	00960	14577	15537	38
23	84476	85411	99065	00935	14589	15524	37
24	84489	85399	99090	00910	14601	15511	36
25	84502	85386	99116	00884	14614	15498	35
26	84515	85374	99141	00859	14626	15485	34
27	84528	85361	99166	00834	14639	15472	33
28	84540	85349	99191	00809	14651	15460	32
29	84553	85337	99217	00783	14663	15447	31
30	9. 84566	9. 85324	9. 99242	10. 00758	10. 14676	10. 15434	30
31	84579	85312	99267	00733	14688	15421	29
32	84592	85299	99293	00707	14701	15408	28
33	84605	85287	99318	00682	14713	15395	27
34	84618	85274	99343	00657	14726	15382	26
35	84630	85262	99368	00632	14738	15370	25
36	84643	85250	99394	00606	14750	15357	24
37	84656	85237	99419	00581	14763	15344	23
38	84669	85225	99444	00556	14775	15331	22
39	84682	85212	99469	00531	14788	15318	21
40	9. 84694	9. 85200	9. 99495	10. 00505	10. 14800	10. 15306	20
41	84707	85187	99520	00480	14813	15293	19
42	84720	85175	99545	00455	14825	15280	18
43	84733	85162	99570	00430	14838	15267	17
44	84745	85150	99596	00404	14850	15255	16
45	84758	85137	99621	00379	14863	15242	15
46	84771	85125	99646	00354	14875	15229	14
47	84784	85112	99672	00328	14888	15216	13
48	84796	85100	99697	00303	14900	15204	12
49	84809	85087	99722	00278	14913	15191	11
50	9. 84822	9. 85074	9. 99747	10. 00253	10. 14926	10. 15178	10
51	84835	85062	99773	00227	14938	15165	9
52	84847	85049	99798	00202	14951	15153	8
53	84860	85037	99823	00177	14963	15140	7
54	84873	85024	99848	00152	14976	15127	6
55	84885	85012	99874	00126	14988	15115	5
56	84898	84999	99899	00101	15001	15102	4
57	84911	84986	99924	00076	15014	15089	3
58	84923	84974	99949	00051	15026	15077	2
59	84936	84961	99975	00025	15039	15064	1
60	84949	84949	10. 00000	10. 00000	15051	15051	0
	Co-sine.	Sine.	Co-tangent.	Tangent.	Co-secant.	Secant.	M.

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N½E.			S½E.			S½W.			N½W.			or ¼ Point.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.0	61	60.9	3.0	121	120.9	5.9	181	180.8	8.9	241	240.7	11.8
2	2.0	0.1	62	61.9	3.0	122	121.9	6.0	182	181.8	8.9	242	241.7	11.8
3	3.0	0.1	63	62.9	3.1	123	122.9	6.0	183	182.8	9.0	243	242.7	11.9
4	4.0	0.2	64	63.9	3.1	124	123.9	6.1	184	183.8	9.0	244	243.7	12.0
5	5.0	0.2	65	64.9	3.2	125	124.8	6.1	185	184.8	9.1	245	244.7	12.0
6	6.0	0.3	66	65.9	3.2	126	125.8	6.2	186	185.8	9.1	246	245.7	12.1
7	7.0	0.3	67	66.9	3.3	127	126.8	6.2	187	186.8	9.2	247	246.7	12.1
8	8.0	0.4	68	67.9	3.3	128	127.8	6.3	188	187.8	9.2	248	247.7	12.1
9	9.0	0.4	69	68.9	3.4	129	128.8	6.3	189	188.8	9.3	249	248.7	12.1
10	10.0	0.5	70	69.9	3.4	130	129.8	6.4	190	189.8	9.3	250	249.7	12.2
11	11.0	0.5	71	70.9	3.5	131	130.8	6.4	191	190.8	9.4	251	250.7	12.2
12	12.0	0.6	72	71.9	3.5	132	131.8	6.5	192	191.8	9.4	252	251.7	12.4
13	13.0	0.6	73	72.9	3.6	133	132.8	6.5	193	192.8	9.5	253	252.7	12.4
14	14.0	0.7	74	73.9	3.6	134	133.8	6.6	194	193.8	9.5	254	253.7	12.5
15	15.0	0.7	75	74.9	3.7	135	134.8	6.6	195	194.8	9.6	255	254.7	12.5
16	16.0	0.8	76	75.9	3.7	136	135.8	6.7	196	195.8	9.6	256	255.7	12.6
17	17.0	0.8	77	76.9	3.8	137	136.8	6.7	197	196.8	9.7	257	256.7	12.6
18	18.0	0.9	78	77.9	3.8	138	137.8	6.8	198	197.8	9.7	258	257.7	12.7
19	19.0	0.9	79	78.9	3.9	139	138.8	6.8	199	198.8	9.8	259	258.7	12.7
20	20.0	1.0	80	79.9	3.9	140	139.8	6.9	200	199.8	9.8	260	259.7	12.8
21	21.0	1.0	81	80.9	4.0	141	140.8	6.9	201	200.8	9.9	261	260.7	12.8
22	22.0	1.1	82	81.9	4.0	142	141.8	7.0	202	201.8	9.9	262	261.7	12.9
23	23.0	1.1	83	82.9	4.1	143	142.8	7.0	203	202.8	10.0	263	262.7	12.9
24	24.0	1.2	84	83.9	4.1	144	143.8	7.1	204	203.8	10.0	264	263.7	13.0
25	25.0	1.2	85	84.9	4.3	145	144.8	7.1	205	204.8	10.1	265	264.7	13.0
26	26.0	1.3	86	85.9	4.2	146	145.8	7.2	206	205.8	10.1	266	265.7	13.1
27	27.0	1.3	87	86.9	4.3	147	146.8	7.2	207	206.8	10.2	267	266.7	13.1
28	28.0	1.4	88	87.9	4.3	148	147.8	7.3	208	207.7	10.2	268	267.7	13.2
29	29.0	1.4	89	88.9	4.4	149	148.8	7.3	209	208.7	10.3	269	268.7	13.2
30	30.0	1.5	90	89.9	4.4	150	149.8	7.4	210	209.7	10.3	270	269.7	13.2
31	31.0	1.5	91	90.9	4.5	151	150.8	7.4	211	210.7	10.4	271	270.7	13.3
32	32.0	1.6	92	91.9	4.5	152	151.8	7.5	212	211.7	10.4	272	271.7	13.3
33	33.0	1.6	93	92.9	4.6	153	152.8	7.5	213	212.7	10.5	273	272.7	13.4
34	34.0	1.7	94	93.9	4.6	154	153.8	7.6	214	213.7	10.5	274	273.7	13.4
35	35.0	1.7	95	94.9	4.7	155	154.8	7.6	215	214.7	10.5	275	274.7	13.5
36	36.0	1.8	96	95.9	4.7	156	155.8	7.7	216	215.7	10.6	276	275.7	13.5
37	37.0	1.8	97	96.9	4.8	157	156.8	7.7	217	216.7	10.6	277	276.7	13.6
38	38.0	1.9	98	97.9	4.8	158	157.8	7.8	218	217.7	10.7	278	277.7	13.6
39	39.0	1.9	99	98.9	4.9	159	158.8	7.8	219	218.7	10.7	279	278.7	13.7
40	40.0	2.0	100	99.9	4.9	160	159.8	7.9	220	219.7	10.8	280	279.7	13.7
41	41.0	2.0	101	100.9	5.0	161	160.8	7.9	221	220.7	10.8	281	280.7	13.8
42	41.9	2.1	102	101.9	5.0	162	161.8	7.9	222	221.7	10.9	282	281.7	13.8
43	42.9	2.1	103	102.9	5.1	163	162.8	8.0	223	222.7	10.9	283	282.7	13.9
44	43.9	2.2	104	103.9	5.1	164	163.8	8.0	224	223.7	11.0	284	283.7	13.9
45	44.9	2.2	105	104.9	5.2	165	164.8	8.1	225	224.7	11.0	285	284.7	14.0
46	45.9	2.3	106	105.9	5.2	166	165.8	8.1	226	225.7	11.1	286	285.7	14.0
47	46.9	2.3	107	106.9	5.3	167	166.8	8.2	227	226.7	11.1	287	286.7	14.1
48	47.9	2.4	108	107.9	5.3	168	167.8	8.2	228	227.7	11.2	288	287.7	14.1
49	48.9	2.4	109	108.9	5.4	169	168.8	8.3	229	228.7	11.2	289	288.7	14.2
50	49.9	2.5	110	109.9	5.4	170	169.8	8.3	230	229.7	11.3	290	289.7	14.2
51	50.9	2.5	111	110.9	5.5	171	170.8	8.4	231	230.7	11.3	291	290.6	14.3
52	51.9	2.6	112	111.9	5.5	172	171.8	8.4	232	231.7	11.4	292	291.6	14.3
53	52.9	2.6	113	112.9	5.5	173	172.8	8.5	233	232.7	11.4	293	292.6	14.4
54	53.9	2.6	114	113.9	5.6	174	173.8	8.5	234	233.7	11.5	294	293.6	14.4
55	54.9	2.7	115	114.9	5.6	175	174.8	8.6	235	234.7	11.5	295	294.6	14.5
56	55.9	2.7	116	115.9	5.7	176	175.8	8.6	236	235.7	11.6	296	295.6	14.5
57	56.9	2.8	117	116.9	5.7	177	176.8	8.7	237	236.7	11.6	297	296.6	14.6
58	57.9	2.8	118	117.9	5.8	178	177.8	8.7	238	237.7	11.7	298	297.6	14.6
59	58.9	2.9	119	118.9	5.8	179	178.8	8.8	239	238.7	11.7	299	298.6	14.7
60	59.9	2.9	120	119.9	5.9	180	179.8	8.8	240	239.7	11.8	300	299.6	14.7
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N½E.			S½E.			S½W.			N½W.			or ¼ Point.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.7	6.0	121	120.4	11.9	181	180.1	17.7	241	239.8	23.6
2	2.0	0.2	62	61.7	6.1	122	121.4	12.0	182	181.1	17.8	242	240.8	23.7
3	3.0	0.3	63	62.7	6.2	123	122.4	12.1	183	182.1	17.9	243	241.8	23.8
4	4.0	0.4	64	63.7	6.3	124	123.4	12.2	184	183.1	18.0	244	242.8	23.9
5	5.0	0.5	65	64.7	6.4	125	124.4	12.3	185	184.1	18.1	245	243.8	24.0
6	6.0	0.6	66	65.7	6.5	126	125.4	12.4	186	185.1	18.2	246	244.8	24.1
7	7.0	0.7	67	66.7	6.6	127	126.4	12.4	187	186.1	18.3	247	245.8	24.2
8	8.0	0.8	68	67.7	6.7	128	127.4	12.5	188	187.1	18.4	248	246.8	24.3
9	9.0	0.9	69	68.7	6.8	129	128.4	12.6	189	188.1	18.5	249	247.8	24.4
10	10.0	1.0	70	69.7	6.9	130	129.4	12.7	190	189.1	18.6	250	248.8	24.5
11	10.9	1.1	71	70.7	7.0	131	130.4	12.8	191	190.1	18.7	251	249.8	24.6
12	11.9	1.2	72	71.7	7.1	132	131.4	12.9	192	191.1	18.8	252	250.8	24.7
13	12.9	1.3	73	72.6	7.2	133	132.4	13.0	193	192.1	18.9	253	251.8	24.8
14	13.9	1.4	74	73.6	7.3	134	133.4	13.1	194	193.1	19.0	254	252.8	24.9
15	14.9	1.5	75	74.6	7.4	135	134.3	13.2	195	194.1	19.1	255	253.8	25.0
16	15.9	1.6	76	75.6	7.4	136	135.3	13.3	196	195.1	19.2	256	254.8	25.1
17	16.9	1.7	77	76.6	7.5	137	136.3	13.4	197	196.1	19.3	257	255.8	25.2
18	17.9	1.8	78	77.6	7.6	138	137.3	13.5	198	197.0	19.4	258	256.8	25.3
19	18.9	1.9	79	78.6	7.7	139	138.3	13.6	199	198.0	19.5	259	257.8	25.4
20	19.9	2.0	80	79.6	7.8	140	139.3	13.7	200	199.0	19.6	260	258.7	25.5
21	20.9	2.1	81	80.6	7.9	141	140.3	13.8	201	200.0	19.7	261	259.7	25.6
22	21.9	2.2	82	81.6	8.0	142	141.3	13.9	202	201.0	19.8	262	260.7	25.7
23	22.9	2.3	83	82.6	8.1	143	142.3	14.0	203	202.0	19.9	263	261.7	25.8
24	23.9	2.4	84	83.6	8.2	144	143.3	14.1	204	203.0	20.0	264	262.7	25.9
25	24.9	2.5	85	84.6	8.3	145	144.3	14.2	205	204.0	20.1	265	263.7	26.0
26	25.9	2.5	86	85.6	8.4	146	145.3	14.3	206	205.0	20.2	266	264.7	26.1
27	26.9	2.6	87	86.6	8.5	147	146.3	14.4	207	206.0	20.3	267	265.7	26.2
28	27.9	2.7	88	87.6	8.6	148	147.3	14.5	208	207.0	20.4	268	266.7	26.3
29	28.9	2.8	89	88.6	8.7	149	148.3	14.6	209	208.0	20.5	269	267.7	26.4
30	29.9	2.9	90	89.6	8.8	150	149.3	14.7	210	209.0	20.6	270	268.7	26.5
31	30.9	3.0	91	90.6	8.9	151	150.3	14.8	211	210.0	20.7	271	269.7	26.6
32	31.8	3.1	92	91.6	9.0	152	151.3	14.9	212	211.0	20.8	272	270.7	26.7
33	32.8	3.2	93	92.6	9.1	153	152.3	15.0	213	212.0	20.9	273	271.7	26.8
34	33.8	3.3	94	93.5	9.2	154	153.3	15.1	214	213.0	21.0	274	272.7	26.9
35	34.8	3.4	95	94.5	9.3	155	154.3	15.2	215	214.0	21.1	275	273.7	27.0
36	35.8	3.5	96	95.5	9.4	156	155.2	15.3	216	215.0	21.2	276	274.7	27.1
37	36.8	3.6	97	96.5	9.5	157	156.2	15.4	217	216.0	21.3	277	275.7	27.2
38	37.8	3.7	98	97.5	9.6	158	157.2	15.5	218	217.0	21.4	278	276.7	27.3
39	38.8	3.8	99	98.5	9.7	159	158.2	15.6	219	217.9	21.5	279	277.7	27.3
40	39.8	3.9	100	99.5	9.8	160	159.2	15.7	220	218.9	21.6	280	278.7	27.4
41	40.8	4.0	101	100.5	9.9	161	160.2	15.8	221	219.9	21.7	281	279.6	27.5
42	41.8	4.1	102	101.5	10.0	162	161.2	15.9	222	220.9	21.8	282	280.6	27.6
43	42.8	4.2	103	102.5	10.1	163	162.2	16.0	223	221.9	21.9	283	281.6	27.7
44	43.8	4.3	104	103.5	10.2	164	163.2	16.1	224	222.9	22.0	284	282.6	27.8
45	44.8	4.4	105	104.5	10.3	165	164.2	16.2	225	223.9	22.1	285	283.6	27.9
46	45.8	4.5	106	105.5	10.4	166	165.2	16.3	226	224.9	22.2	286	284.6	28.0
47	46.8	4.6	107	106.5	10.5	167	166.2	16.4	227	225.9	22.2	287	285.6	28.1
48	47.8	4.7	108	107.5	10.6	168	167.2	16.5	228	226.9	22.3	288	286.6	28.2
49	48.8	4.8	109	108.5	10.7	169	168.2	16.6	229	227.9	22.4	289	287.6	28.3
50	49.8	4.9	110	109.5	10.8	170	169.2	16.7	230	228.9	22.5	290	288.6	28.4
51	50.8	5.0	111	110.5	10.9	171	170.2	16.8	231	229.9	22.6	291	289.6	28.5
52	51.7	5.1	112	111.5	11.0	172	171.2	16.9	232	230.9	22.7	292	290.6	28.6
53	52.7	5.2	113	112.5	11.1	173	172.2	17.0	233	231.9	22.8	293	291.6	28.7
54	53.7	5.3	114	113.5	11.2	174	173.2	17.1	234	232.9	22.9	294	292.6	28.8
55	54.7	5.4	115	114.4	11.3	175	174.2	17.2	235	233.9	23.0	295	293.6	28.9
56	55.7	5.5	116	115.4	11.4	176	175.2	17.3	236	234.9	23.1	296	294.6	29.0
57	56.7	5.6	117	116.4	11.5	177	176.1	17.3	237	235.9	23.2	297	295.6	29.1
58	57.7	5.7	118	117.4	11.6	178	177.1	17.4	238	236.9	23.3	298	296.6	29.2
59	58.7	5.8	119	118.4	11.7	179	178.1	17.5	239	237.8	23.4	299	297.6	29.3
60	59.7	5.9	120	119.4	11.8	180	179.1	17.6	240	238.8	23.5	300	298.6	29.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.
E½N.			E½S.			W½S.			W½N.			or ¼ Points.		

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N½E.			S½E.			S½W.			N½W.			or ½ Point.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.3	9.0	121	119.7	17.8	181	179.0	26.6	241	238.4	35.4
2	2.0	0.3	62	61.3	9.1	122	120.7	17.9	182	180.0	26.7	242	239.4	35.5
3	3.0	0.4	63	62.3	9.2	123	121.7	18.0	183	181.0	26.9	243	240.4	35.7
4	4.0	0.6	64	63.3	9.4	124	122.7	18.2	184	182.0	27.0	244	241.4	35.8
5	4.9	0.7	65	64.3	9.5	125	123.6	18.3	185	183.0	27.1	245	242.3	35.9
6	5.9	0.9	66	65.3	9.7	126	124.6	18.5	186	184.0	27.3	246	243.3	36.1
7	6.9	1.0	67	66.3	9.8	127	125.6	18.6	187	185.0	27.4	247	244.3	36.2
8	7.9	1.2	68	67.3	10.0	128	126.6	18.8	188	186.0	27.6	248	245.3	36.4
9	8.9	1.3	69	68.3	10.1	129	127.6	18.9	189	187.0	27.7	249	246.3	36.5
10	9.9	1.5	70	69.2	10.3	130	128.6	19.1	190	187.9	27.9	250	247.3	36.7
11	10.9	1.6	71	70.2	10.4	131	129.6	19.2	191	188.9	28.0	251	248.3	36.8
12	11.9	1.8	72	71.2	10.6	132	130.6	19.4	192	189.9	28.2	252	249.3	37.0
13	12.9	1.9	73	72.2	10.7	133	131.6	19.5	193	190.9	28.3	253	250.3	37.1
14	13.8	2.1	74	73.2	10.9	134	132.5	19.7	194	191.9	28.5	254	251.3	37.3
15	14.8	2.2	75	74.2	11.0	135	133.5	19.8	195	192.9	28.6	255	252.2	37.4
16	15.8	2.3	76	75.2	11.2	136	134.5	20.0	196	193.9	28.8	256	253.2	37.6
17	16.8	2.5	77	76.2	11.3	137	135.5	20.1	197	194.9	28.9	257	254.2	37.7
18	17.8	2.6	78	77.2	11.4	138	136.5	20.2	198	195.9	29.1	258	255.2	37.9
19	18.8	2.8	79	78.1	11.6	139	137.6	20.4	199	196.8	29.2	259	256.2	38.0
20	19.8	2.9	80	79.1	11.7	140	138.5	20.5	200	197.8	29.3	260	257.2	38.1
21	20.8	3.1	81	80.1	11.9	141	139.5	20.7	201	198.8	29.5	261	258.2	38.3
22	21.8	3.2	82	81.1	12.0	142	140.5	20.8	202	199.8	29.6	262	259.2	38.4
23	22.8	3.4	83	82.1	12.2	143	141.5	21.0	203	200.8	29.8	263	260.2	38.6
24	23.7	3.5	84	83.1	12.3	144	142.4	21.1	204	201.8	29.9	264	261.1	38.7
25	24.7	3.7	85	84.1	12.5	145	143.4	21.3	205	202.8	30.1	265	262.1	38.9
26	25.7	3.8	86	85.1	12.6	146	144.4	21.4	206	203.8	30.2	266	263.1	39.0
27	26.7	4.0	87	86.1	12.8	147	145.4	21.6	207	204.8	30.4	267	264.1	39.2
28	27.7	4.1	88	87.0	12.9	148	146.4	21.7	208	205.7	30.5	268	265.1	39.3
29	28.7	4.3	89	88.0	13.1	149	147.4	21.9	209	206.7	30.7	269	266.1	39.5
30	29.7	4.4	90	89.0	13.2	150	148.4	22.0	210	207.7	30.8	270	267.1	39.6
31	30.7	4.5	91	90.0	13.4	151	149.4	22.2	211	208.7	31.0	271	268.1	39.8
32	31.7	4.7	92	91.0	13.5	152	150.4	22.3	212	209.7	31.1	272	269.1	39.9
33	32.6	4.8	93	92.0	13.6	153	151.3	22.4	213	210.7	31.3	273	270.0	40.1
34	33.6	5.0	94	93.0	13.8	154	152.3	22.6	214	211.7	31.4	274	271.0	40.2
35	34.6	5.1	95	94.0	13.9	155	153.3	22.7	215	212.7	31.5	275	272.0	40.4
36	35.5	5.3	96	95.0	14.1	156	154.3	22.9	216	213.7	31.7	276	273.0	40.5
37	36.6	5.4	97	96.0	14.2	157	155.3	23.0	217	214.7	31.8	277	274.0	40.6
38	37.6	5.6	98	96.9	14.4	158	156.3	23.2	218	215.6	32.0	278	275.0	40.8
39	38.6	5.7	99	97.9	14.5	159	157.3	23.3	219	216.6	32.1	279	276.0	40.9
40	39.6	5.9	100	98.9	14.7	160	158.3	23.5	220	217.6	32.3	280	277.0	41.1
41	40.6	6.0	101	99.9	14.8	161	159.3	23.6	221	218.6	32.4	281	278.0	41.2
42	41.5	6.2	102	100.9	15.0	162	160.2	23.8	222	219.6	32.6	282	278.9	41.4
43	42.5	6.3	103	101.9	15.1	163	161.2	23.9	223	220.6	32.7	283	279.9	41.5
44	43.5	6.5	104	102.9	15.3	164	162.2	24.1	224	221.6	32.9	284	280.9	41.7
45	44.5	6.6	105	103.9	15.4	165	163.2	24.2	225	222.6	33.0	285	281.9	41.8
46	45.5	6.7	106	104.9	15.6	166	164.2	24.4	226	223.6	33.2	286	282.9	42.0
47	46.5	6.9	107	105.8	15.7	167	165.2	24.5	227	224.5	33.3	287	283.9	42.1
48	47.5	7.0	108	106.8	15.8	168	166.2	24.7	228	225.5	33.5	288	284.9	42.3
49	48.5	7.2	109	107.8	16.0	169	167.2	24.8	229	226.5	33.6	289	285.9	42.4
50	49.5	7.3	110	108.8	16.1	170	168.2	24.9	230	227.5	33.7	290	286.9	42.6
51	50.4	7.5	111	109.8	16.3	171	169.1	25.1	231	228.5	33.9	291	287.9	42.7
52	51.4	7.6	112	110.8	16.4	172	170.1	25.2	232	229.5	34.0	292	288.8	42.8
53	52.4	7.8	113	111.8	16.6	173	171.1	25.4	233	230.5	34.2	293	289.8	43.0
54	53.4	7.9	114	112.8	16.7	174	172.1	25.5	234	231.5	34.3	294	290.8	43.1
55	54.4	8.1	115	113.8	16.9	175	173.1	25.7	235	232.5	34.5	295	291.8	43.3
56	55.4	8.2	116	114.7	17.0	176	174.1	25.8	236	233.4	34.6	296	292.8	43.4
57	56.4	8.4	117	115.7	17.2	177	175.1	26.0	237	234.4	34.8	297	293.8	43.6
58	57.4	8.5	118	116.7	17.3	178	176.1	26.1	238	235.4	34.9	298	294.8	43.7
59	58.4	8.7	119	117.7	17.5	179	177.1	26.3	239	236.4	35.1	299	295.8	43.9
60	59.4	8.8	120	118.7	17.6	180	178.1	26.4	240	237.4	35.2	300	296.8	44.0
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.
E½N.			E½S.			W½S.			W½N.			or ¾ Points.		

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N.E.			S.E.			S.W.			N.W.			or 1 Point.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	59.8	11.9	121	118.7	23.6	181	177.5	35.3	241	236.4	47.0
2	2.0	0.4	62	60.8	12.1	122	119.7	23.8	182	178.5	35.5	242	237.4	47.2
3	2.9	0.6	63	61.8	12.3	123	120.6	24.0	183	179.5	35.7	243	238.3	47.4
4	3.9	0.8	64	62.8	12.5	124	121.6	24.2	184	180.5	35.9	244	239.3	47.6
5	4.9	1.0	65	63.8	12.7	125	122.6	24.4	185	181.4	36.1	245	240.3	47.8
6	5.9	1.2	66	64.7	12.9	126	123.6	24.6	186	182.4	36.3	246	241.3	48.0
7	6.9	1.4	67	65.7	13.1	127	124.6	24.8	187	183.4	36.5	247	242.3	48.2
8	7.8	1.6	68	66.7	13.3	128	125.5	25.0	188	184.4	36.7	248	243.2	48.4
9	8.8	1.8	69	67.7	13.5	129	126.5	25.2	189	185.4	36.9	249	244.2	48.6
10	9.8	2.0	70	68.7	13.7	130	127.5	25.4	190	186.3	37.1	250	245.2	48.8
11	10.8	2.1	71	69.6	13.9	131	128.5	25.6	191	187.3	37.3	251	246.2	49.0
12	11.8	2.3	72	70.6	14.0	132	129.5	25.8	192	188.3	37.5	252	247.2	49.2
13	12.8	2.5	73	71.6	14.2	133	130.4	25.9	193	189.3	37.7	253	248.1	49.4
14	13.7	2.7	74	72.6	14.4	134	131.4	26.1	194	190.3	37.8	254	249.1	49.6
15	14.7	2.9	75	73.6	14.6	135	132.4	26.3	195	191.3	38.0	255	250.1	49.7
16	15.7	3.1	76	74.5	14.8	136	133.4	26.5	196	192.2	38.2	256	251.1	49.9
17	16.7	3.3	77	75.5	15.0	137	134.4	26.7	197	193.2	38.4	257	252.1	50.1
18	17.7	3.5	78	76.5	15.2	138	135.3	26.9	198	194.2	38.6	258	253.0	50.3
19	18.6	3.7	79	77.5	15.4	139	136.3	27.1	199	195.2	38.8	259	254.0	50.5
20	19.6	3.9	80	78.5	15.6	140	137.3	27.3	200	196.2	39.0	260	255.0	50.7
21	20.6	4.1	81	79.4	15.8	141	138.3	27.5	201	197.1	39.2	261	256.0	50.9
22	21.6	4.3	82	80.4	16.0	142	139.3	27.7	202	198.1	39.4	262	257.0	51.1
23	22.6	4.5	83	81.4	16.2	143	140.3	27.9	203	199.1	39.6	263	257.9	51.3
24	23.5	4.7	84	82.4	16.4	144	141.2	28.1	204	200.1	39.8	264	258.9	51.5
25	24.5	4.9	85	83.4	16.6	145	142.2	28.3	205	201.1	40.0	265	259.9	51.7
26	25.5	5.1	86	84.3	16.8	146	143.2	28.5	206	202.0	40.2	266	260.9	51.9
27	26.5	5.3	87	85.3	17.0	147	144.2	28.7	207	203.0	40.4	267	261.9	52.1
28	27.5	5.5	88	86.3	17.2	148	145.2	28.9	208	204.0	40.6	268	262.9	52.3
29	28.4	5.7	89	87.3	17.4	149	146.1	29.1	209	205.0	40.8	269	263.8	52.5
30	29.4	5.9	90	88.3	17.6	150	147.1	29.3	210	206.0	41.0	270	264.8	52.7
31	30.4	6.0	91	89.3	17.8	151	148.1	29.5	211	206.9	41.2	271	265.8	52.9
32	31.4	6.2	92	90.2	17.9	152	149.1	29.7	212	207.9	41.4	272	266.8	53.1
33	32.4	6.4	93	91.2	18.1	153	150.1	29.8	213	208.9	41.6	273	267.8	53.3
34	33.3	6.6	94	92.2	18.3	154	151.0	30.0	214	209.9	41.7	274	268.7	53.5
35	34.3	6.8	95	93.2	18.5	155	152.0	30.2	215	210.9	41.9	275	269.7	53.6
36	35.3	7.0	96	94.2	18.7	156	153.0	30.4	216	211.8	42.1	276	270.7	53.8
37	36.3	7.2	97	95.1	18.9	157	154.0	30.6	217	212.8	42.3	277	271.7	54.0
38	37.3	7.4	98	96.1	19.1	158	155.0	30.8	218	213.8	42.5	278	272.7	54.2
39	38.3	7.6	99	97.1	19.3	159	155.9	31.0	219	214.8	42.7	279	273.6	54.4
40	39.2	7.8	100	98.1	19.5	160	156.9	31.2	220	215.8	42.9	280	274.6	54.6
41	40.2	8.0	101	99.1	19.7	161	157.9	31.4	221	216.8	43.1	281	275.6	54.8
42	41.2	8.2	102	100.0	19.9	162	158.9	31.6	222	217.7	43.3	282	276.6	55.0
43	42.2	8.4	103	101.0	20.1	163	159.9	31.8	223	218.7	43.5	283	277.6	55.2
44	43.2	8.6	104	102.0	20.3	164	160.8	32.0	224	219.7	43.7	284	278.5	55.4
45	44.1	8.8	105	103.0	20.5	165	161.8	32.2	225	220.7	43.9	285	279.5	55.6
46	45.1	9.0	106	104.0	20.7	166	162.8	32.4	226	221.7	44.1	286	280.5	55.8
47	46.1	9.2	107	104.9	20.9	167	163.8	32.6	227	222.6	44.3	287	281.5	56.0
48	47.1	9.4	108	105.9	21.1	168	164.8	32.8	228	223.6	44.5	288	282.5	56.2
49	48.1	9.6	109	106.9	21.3	169	165.8	33.0	229	224.6	44.7	289	283.4	56.4
50	49.0	9.8	110	107.9	21.5	170	166.7	33.2	230	225.6	44.9	290	284.4	56.6
51	50.0	9.9	111	108.9	21.7	171	167.7	33.4	231	226.6	45.1	291	285.4	56.8
52	51.0	10.1	112	109.8	21.9	172	168.7	33.6	232	227.5	45.3	292	286.4	57.0
53	52.0	10.3	113	110.8	22.0	173	169.7	33.8	233	228.5	45.5	293	287.4	57.2
54	53.0	10.5	114	111.8	22.2	174	170.7	33.9	234	229.5	45.7	294	288.4	57.4
55	53.9	10.7	115	112.8	22.4	175	171.6	34.1	235	230.5	45.8	295	289.3	57.6
56	54.9	10.9	116	113.8	22.6	176	172.6	34.3	236	231.5	46.0	296	290.3	57.7
57	55.9	11.1	117	114.8	22.8	177	173.6	34.5	237	232.4	46.2	297	291.3	57.9
58	56.9	11.3	118	115.7	23.0	178	174.6	34.7	238	233.4	46.4	298	292.3	58.1
59	57.9	11.5	119	116.7	23.2	179	175.6	34.9	239	234.4	46.6	299	293.3	58.3
60	58.8	11.7	120	117.7	23.4	180	176.5	35.1	240	235.4	46.8	300	294.2	58.5
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat
E6N.			E6S.			W6S.			W6N.			or 7 Points.		

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N6E½E.			S6E½E.			S6W½W.			N6W½W.			or 1½ Points.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.2	61	59.2	14.8	121	117.4	29.4	181	175.6	44.0	241	233.8	58.6
2	1.9	0.5	62	60.1	15.1	122	118.3	29.6	182	176.5	44.2	242	234.7	58.8
3	2.9	0.7	63	61.1	15.3	123	119.3	29.9	183	177.5	44.5	243	235.7	59.0
4	3.9	1.0	64	62.1	15.6	124	120.3	30.1	184	178.5	44.7	244	236.7	59.3
5	4.9	1.2	65	63.1	15.8	125	121.3	30.4	185	179.5	45.0	245	237.7	59.5
6	5.8	1.5	66	64.0	16.0	126	122.2	30.6	186	180.4	45.2	246	238.6	59.8
7	6.8	1.7	67	65.0	16.3	127	123.2	30.9	187	181.4	45.4	247	239.6	60.0
8	7.8	1.9	68	66.0	16.5	128	124.2	31.1	188	182.4	45.7	248	240.6	60.3
9	8.7	2.2	69	66.9	16.8	129	125.1	31.3	189	183.3	45.9	249	241.5	60.5
10	9.7	2.4	70	67.9	17.0	130	126.1	31.6	190	184.3	46.2	250	242.5	60.7
11	10.7	2.7	71	68.9	17.3	131	127.1	31.8	191	185.3	46.4	251	243.5	61.0
12	11.6	2.9	72	69.8	17.5	132	128.0	32.1	192	186.2	46.7	252	244.4	61.2
13	12.6	3.2	73	70.8	17.7	133	129.0	32.3	193	187.2	46.9	253	245.4	61.5
14	13.6	3.4	74	71.8	18.0	134	130.0	32.6	194	188.2	47.1	254	246.4	61.7
15	14.6	3.6	75	72.8	18.2	135	131.0	32.8	195	189.2	47.4	255	247.4	62.0
16	15.5	3.9	76	73.7	18.5	136	131.9	33.0	196	190.1	47.6	256	248.3	62.2
17	16.5	4.1	77	74.7	18.7	137	132.9	33.3	197	191.1	47.9	257	249.3	62.4
18	17.5	4.4	78	75.7	19.0	138	133.9	33.5	198	192.1	48.1	258	250.3	62.7
19	18.4	4.6	79	76.6	19.2	139	134.8	33.8	199	193.0	48.4	259	251.2	62.9
20	19.4	4.9	80	77.6	19.4	140	135.8	34.0	200	194.0	48.6	260	252.2	63.2
21	20.4	5.1	81	78.6	19.7	141	136.8	34.3	201	195.0	48.8	261	253.2	63.4
22	21.3	5.3	82	79.5	19.9	142	137.7	34.5	202	195.9	49.1	262	254.1	63.7
23	22.3	5.6	83	80.5	20.2	143	138.7	34.7	203	196.9	49.3	263	255.1	63.9
24	23.3	5.8	84	81.5	20.4	144	139.7	35.0	204	197.9	49.6	264	256.1	64.1
25	24.3	6.1	85	82.5	20.7	145	140.7	35.2	205	198.9	49.8	265	257.1	64.4
26	25.2	6.3	86	83.4	20.9	146	141.6	35.5	206	199.8	50.1	266	258.0	64.6
27	26.2	6.6	87	84.4	21.1	147	142.6	35.7	207	200.8	50.3	267	259.0	64.9
28	27.2	6.8	88	85.4	21.4	148	143.6	36.0	208	201.8	50.5	268	260.0	65.1
29	28.1	7.0	89	86.3	21.6	149	144.5	36.2	209	202.7	50.8	269	260.9	65.4
30	29.1	7.3	90	87.3	21.9	150	145.5	36.4	210	203.7	51.0	270	261.9	65.6
31	30.1	7.5	91	88.3	22.1	151	146.5	36.7	211	204.7	51.3	271	262.9	65.8
32	31.0	7.8	92	89.2	22.4	152	147.4	36.9	212	205.6	51.5	272	263.8	66.1
33	32.0	8.0	93	90.2	22.6	153	148.4	37.2	213	206.6	51.8	273	264.8	66.3
34	33.0	8.3	94	91.2	22.8	154	149.4	37.4	214	207.6	52.0	274	265.8	66.6
35	34.0	8.5	95	92.2	23.1	155	150.4	37.7	215	208.6	52.2	275	266.8	66.8
36	34.9	8.7	96	93.1	23.3	156	151.3	37.9	216	209.5	52.5	276	267.7	67.1
37	35.9	9.0	97	94.1	23.6	157	152.3	38.1	217	210.5	52.7	277	268.7	67.3
38	36.9	9.2	98	95.1	23.8	158	153.3	38.4	218	211.5	53.0	278	269.7	67.5
39	37.8	9.5	99	96.0	24.1	159	154.2	38.6	219	212.4	53.2	279	270.6	67.8
40	38.8	9.7	100	97.0	24.3	160	155.2	38.9	220	213.4	53.5	280	271.6	68.0
41	39.8	10.0	101	98.0	24.5	161	156.2	39.1	221	214.4	53.7	281	272.6	68.3
42	40.7	10.2	102	98.9	24.8	162	157.1	39.4	222	215.3	53.9	282	273.5	68.5
43	41.7	10.4	103	99.9	25.0	163	158.1	39.6	223	216.3	54.2	283	274.5	68.8
44	42.7	10.7	104	100.9	25.3	164	159.1	39.8	224	217.3	54.4	284	275.5	69.0
45	43.7	10.9	105	101.9	25.5	165	160.1	40.1	225	218.3	54.7	285	276.5	69.2
46	44.6	11.2	106	102.8	25.8	166	161.0	40.3	226	219.3	54.9	286	277.4	69.5
47	45.6	11.4	107	103.8	26.0	167	162.0	40.6	227	220.2	55.2	287	278.4	69.7
48	46.6	11.7	108	104.8	26.2	168	163.0	40.8	228	221.2	55.4	288	279.4	70.0
49	47.5	11.9	109	105.7	26.5	169	163.9	41.1	229	222.1	55.6	289	280.3	70.2
50	48.5	12.1	110	106.7	26.7	170	164.9	41.3	230	223.1	55.9	290	281.3	70.5
51	49.5	12.4	111	107.7	27.0	171	165.9	41.5	231	224.1	56.1	291	282.3	70.7
52	50.4	12.6	112	108.6	27.2	172	166.8	41.8	232	225.0	56.4	292	283.2	71.0
53	51.4	12.9	113	109.6	27.5	173	167.8	42.0	233	226.0	56.6	293	284.2	71.2
54	52.4	13.1	114	110.6	27.7	174	168.8	42.3	234	227.0	56.9	294	285.2	71.4
55	53.4	13.4	115	111.6	27.9	175	169.8	42.5	235	228.0	57.1	295	286.2	71.7
56	54.3	13.6	116	112.5	28.2	176	170.7	42.8	236	228.9	57.3	296	287.1	71.9
57	55.3	13.8	117	113.5	28.4	177	171.7	43.0	237	229.9	57.6	297	288.1	72.2
58	56.3	14.1	118	114.5	28.7	178	172.7	43.3	238	230.9	57.8	298	289.1	72.4
59	57.2	14.3	119	115.4	28.9	179	173.6	43.5	239	231.8	58.1	299	290.0	72.7
60	58.2	14.6	120	116.4	29.2	180	174.6	43.7	240	232.8	58.3	300	291.0	72.9
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

E6N½N.

E6S½S.

W6S½S.

W6N½N.

or 64 Points.

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N $\frac{1}{2}$ E.			S $\frac{1}{2}$ E.			S $\frac{1}{2}$ W.			N $\frac{1}{2}$ W.			or $1\frac{1}{2}$ Points.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.3	61	58.4	17.7	121	15.8	35.1	181	173.2	52.5	241	230.6	70.0
2	1.9	0.6	62	59.3	18.0	122	16.7	35.4	182	174.2	52.8	242	231.6	70.2
3	2.9	0.9	63	60.3	18.3	123	17.7	35.7	183	175.1	53.1	243	232.5	70.5
4	3.8	1.2	64	61.2	18.6	124	18.7	36.0	184	176.1	53.4	244	233.5	70.8
5	4.8	1.5	65	62.2	18.9	125	19.6	36.3	185	177.0	53.7	245	234.5	71.1
6	5.7	1.7	66	63.2	19.2	126	20.6	36.6	186	178.0	54.0	246	235.4	71.4
7	6.7	2.0	67	64.1	19.4	127	21.5	36.9	187	178.9	54.3	247	236.4	71.7
8	7.7	2.3	68	65.1	19.7	128	22.5	37.2	188	179.9	54.6	248	237.3	72.0
9	8.6	2.6	69	66.0	20.0	129	23.4	37.4	189	180.9	54.9	249	238.3	72.3
10	9.6	2.9	70	67.0	20.3	130	24.4	37.7	190	181.8	55.2	250	239.2	72.6
11	10.5	3.2	71	67.9	20.6	131	25.4	38.0	191	182.8	55.4	251	240.2	72.9
12	11.5	3.5	72	68.9	20.9	132	26.3	38.3	192	183.7	55.7	252	241.1	73.2
13	12.4	3.8	73	69.9	21.2	133	27.3	38.6	193	184.7	56.0	253	242.1	73.4
14	13.4	4.1	74	70.8	21.5	134	28.2	38.9	194	185.6	56.3	254	243.1	73.7
15	14.4	4.4	75	71.8	21.8	135	29.2	39.2	195	186.6	56.6	255	244.0	74.0
16	15.3	4.6	76	72.7	22.1	136	30.1	39.5	196	187.6	56.9	256	245.0	74.3
17	16.3	4.9	77	73.7	22.4	137	31.1	39.8	197	188.5	57.2	257	245.9	74.6
18	17.2	5.2	78	74.6	22.6	138	32.1	40.1	198	189.5	57.5	258	246.9	74.9
19	18.2	5.5	79	75.6	22.9	139	33.0	40.3	199	190.4	57.8	259	247.8	75.2
20	19.1	5.8	80	76.6	23.2	140	34.0	40.6	200	191.4	58.1	260	248.8	75.5
21	20.1	6.1	81	77.5	23.5	141	34.9	40.9	201	192.3	58.3	261	249.8	75.8
22	21.1	6.4	82	78.5	23.8	142	35.9	41.2	202	193.3	58.6	262	250.7	76.1
23	22.0	6.7	83	79.4	24.1	143	36.8	41.5	203	194.3	58.9	263	251.7	76.3
24	23.0	7.0	84	80.4	24.4	144	37.8	41.8	204	195.2	59.2	264	252.6	76.6
25	23.9	7.3	85	81.3	24.7	145	38.8	42.1	205	196.2	59.5	265	253.6	76.9
26	24.9	7.5	86	82.3	25.0	146	39.7	42.4	206	197.1	59.8	266	254.5	77.2
27	25.8	7.8	87	83.3	25.3	147	40.7	42.7	207	198.1	60.1	267	255.5	77.5
28	26.8	8.1	88	84.2	25.5	148	41.6	43.0	208	199.0	60.4	268	256.5	77.8
29	27.8	8.4	89	85.2	25.8	149	42.6	43.3	209	200.0	60.7	269	257.4	78.1
30	28.7	8.7	90	86.1	26.1	150	43.5	43.5	210	201.0	61.0	270	258.4	78.4
31	29.7	9.0	91	87.1	26.4	151	44.5	43.8	211	201.9	61.3	271	259.3	78.7
32	30.6	9.3	92	88.0	26.7	152	45.5	44.1	212	202.9	61.5	272	260.3	79.0
33	31.6	9.6	93	89.0	27.0	153	46.4	44.4	213	203.8	61.8	273	261.2	79.3
34	32.5	9.9	94	90.0	27.3	154	47.4	44.7	214	204.8	62.1	274	262.2	79.5
35	33.5	10.2	95	90.9	27.6	155	48.3	45.0	215	205.7	62.4	275	263.2	79.8
36	34.4	10.5	96	91.9	27.9	156	49.3	45.3	216	206.7	62.7	276	264.1	80.1
37	35.4	10.7	97	92.8	28.2	157	50.2	45.6	217	207.7	63.0	277	265.1	80.4
38	36.4	11.0	98	93.8	28.4	158	51.2	45.9	218	208.6	63.3	278	266.0	80.7
39	37.3	11.3	99	94.7	28.7	159	52.2	46.2	219	209.6	63.6	279	267.0	81.0
40	38.3	11.6	100	95.7	29.0	160	53.1	46.4	220	210.5	63.9	280	267.9	81.3
41	39.2	11.9	101	96.7	29.3	161	54.1	46.7	221	211.5	64.2	281	268.9	81.6
42	40.2	12.2	102	97.6	29.6	162	55.0	47.0	222	212.4	64.4	282	269.9	81.9
43	41.1	12.5	103	98.6	29.9	163	56.0	47.3	223	213.4	64.7	283	270.8	82.2
44	42.1	12.8	104	99.5	30.2	164	56.9	47.6	224	214.4	65.0	284	271.8	82.4
45	43.1	13.1	105	100.5	30.5	165	57.9	47.9	225	215.3	65.3	285	272.7	82.7
46	44.0	13.4	106	101.4	30.8	166	58.9	48.2	226	216.3	65.6	286	273.7	83.0
47	45.0	13.6	107	102.4	31.1	167	59.8	48.5	227	217.2	65.9	287	274.6	83.3
48	45.9	13.9	108	103.3	31.4	168	60.8	48.8	228	218.2	66.2	288	275.6	83.6
49	46.9	14.2	109	104.3	31.6	169	61.7	49.1	229	219.1	66.5	289	276.6	83.9
50	47.8	14.5	110	105.3	31.9	170	62.7	49.3	230	220.1	66.8	290	277.5	84.2
51	48.8	14.8	111	106.2	32.2	171	63.6	49.6	231	221.1	67.1	291	278.5	84.5
52	49.8	15.1	112	107.2	32.5	172	64.6	49.9	232	222.0	67.3	292	279.4	84.8
53	50.7	15.4	113	108.1	32.8	173	65.6	50.2	233	223.0	67.6	293	280.4	85.1
54	51.7	15.7	114	109.1	33.1	174	66.5	50.5	234	223.9	67.9	294	281.3	85.3
55	52.6	16.0	115	110.0	33.4	175	67.5	50.8	235	224.9	68.2	295	282.3	85.6
56	53.6	16.3	116	111.0	33.7	176	68.4	51.1	236	225.8	68.5	296	283.3	85.9
57	54.5	16.5	117	112.0	34.0	177	69.4	51.4	237	226.8	68.8	297	284.2	86.2
58	55.5	16.8	118	112.9	34.3	178	70.3	51.7	238	227.8	69.1	298	285.2	86.5
59	56.5	17.1	119	113.9	34.5	179	71.3	52.0	239	228.7	69.4	299	286.1	86.8
60	57.4	17.4	120	114.8	34.8	180	72.2	52.3	240	229.7	69.7	300	287.1	87.1
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat
E $\frac{1}{2}$ N.			E $\frac{1}{4}$ S.			W $\frac{1}{4}$ S.			W $\frac{1}{2}$ N.			or $\frac{1}{2}$ Points.		

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

N 0° E.			S 0° E.			S 0° W.			N 0° W.			or 1 1/2 Points.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.3	61	57.4	20.6	121	113.9	40.8	181	170.4	61.0	241	226.9	81.2
2	1.9	0.7	62	58.4	20.9	122	114.9	41.1	182	171.4	61.3	242	227.9	81.5
3	2.8	1.0	63	59.3	21.2	123	115.8	41.4	183	172.3	61.7	243	228.8	81.9
4	3.8	1.3	64	60.3	21.6	124	116.8	41.8	184	173.2	62.0	244	229.7	82.2
5	4.7	1.7	65	61.2	21.9	125	117.7	42.1	185	174.2	62.3	245	230.7	82.5
6	5.6	2.0	66	62.1	22.2	126	118.6	42.4	186	175.1	62.7	246	231.6	82.9
7	6.6	2.4	67	63.1	22.6	127	119.6	42.8	187	176.1	63.0	247	232.6	83.2
8	7.5	2.7	68	64.0	22.9	128	120.5	43.1	188	177.0	63.3	248	233.5	83.5
9	8.5	3.0	69	65.0	23.2	129	121.5	43.5	189	178.0	63.7	249	234.4	83.9
10	9.4	3.4	70	65.9	23.6	130	122.4	43.8	190	178.9	64.0	250	235.4	84.2
11	10.4	3.7	71	66.8	23.9	131	123.3	44.1	191	179.8	64.3	251	236.3	84.6
12	11.3	4.0	72	67.8	24.3	132	124.3	44.5	192	180.8	64.7	252	237.3	84.9
13	12.2	4.4	73	68.7	24.6	133	125.2	44.8	193	181.7	65.0	253	238.2	85.2
14	13.2	4.7	74	69.7	24.9	134	126.2	45.1	194	182.7	65.4	254	239.2	85.6
15	14.1	5.1	75	70.6	25.3	135	127.1	45.5	195	183.6	65.7	255	240.1	85.9
16	15.1	5.4	76	71.6	25.6	136	128.0	45.8	196	184.5	66.0	256	241.0	86.2
17	16.0	5.7	77	72.5	25.9	137	129.0	46.2	197	185.5	66.4	257	242.0	86.6
18	16.9	6.1	78	73.4	26.3	138	129.9	46.5	198	186.4	66.7	258	242.9	86.9
19	17.9	6.4	79	74.4	26.6	139	130.9	46.8	199	187.4	67.0	259	243.9	87.3
20	18.8	6.7	80	75.3	27.0	140	131.8	47.2	200	188.3	67.4	260	244.8	87.6
21	19.8	7.1	81	76.3	27.3	141	132.8	47.5	201	189.3	67.7	261	245.7	87.9
22	20.7	7.4	82	77.2	27.6	142	133.7	47.8	202	190.2	68.1	262	246.7	88.3
23	21.7	7.7	83	78.1	28.0	143	134.6	48.2	203	191.1	68.4	263	247.6	88.6
24	22.6	8.1	84	79.1	28.3	144	135.6	48.5	204	192.1	68.7	264	248.6	88.9
25	23.5	8.4	85	80.0	28.6	145	136.5	48.8	205	193.0	69.1	265	249.5	89.3
26	24.5	8.8	86	81.0	29.0	146	137.5	49.2	206	194.0	69.4	266	250.5	89.6
27	25.4	9.1	87	81.9	29.3	147	138.4	49.5	207	194.9	69.7	267	251.4	89.9
28	26.4	9.4	88	82.9	29.6	148	139.3	49.9	208	195.8	70.1	268	252.3	90.3
29	27.3	9.8	89	83.8	30.0	149	140.3	50.2	209	196.8	70.4	269	253.3	90.6
30	28.2	10.1	90	84.7	30.3	150	141.2	50.5	210	197.7	70.7	270	254.2	91.0
31	29.2	10.4	91	85.7	30.7	151	142.2	50.9	211	198.7	71.1	271	255.2	91.3
32	30.1	10.8	92	86.6	31.0	152	143.1	51.2	212	199.6	71.4	272	256.1	91.6
33	31.1	11.1	93	87.6	31.3	153	144.1	51.5	213	200.5	71.8	273	257.0	92.0
34	32.0	11.5	94	88.5	31.7	154	145.0	51.9	214	201.5	72.1	274	258.0	92.3
35	33.0	11.8	95	89.4	32.0	155	145.9	52.2	215	202.4	72.4	275	258.9	92.6
36	33.9	12.1	96	90.4	32.3	156	146.9	52.6	216	203.4	72.8	276	259.9	93.0
37	34.8	12.5	97	91.3	32.7	157	147.8	52.9	217	204.3	73.1	277	260.8	93.3
38	35.8	12.8	98	92.3	33.0	158	148.8	53.2	218	205.3	73.4	278	261.7	93.7
39	36.7	13.1	99	93.2	33.4	159	149.7	53.6	219	206.2	73.8	279	262.7	94.0
40	37.7	13.5	100	94.2	33.7	160	150.6	53.9	220	207.1	74.1	280	263.6	94.3
41	38.6	13.8	101	95.1	34.0	161	151.6	54.2	221	208.1	74.5	281	264.6	94.7
42	39.5	14.1	102	96.0	34.4	162	152.5	54.6	222	209.0	74.8	282	265.5	95.0
43	40.5	14.5	103	97.0	34.7	163	153.5	54.9	223	210.0	75.1	283	266.5	95.3
44	41.4	14.8	104	97.9	35.0	164	154.4	55.2	224	210.9	75.5	284	267.4	95.7
45	42.4	15.2	105	98.9	35.4	165	155.4	55.6	225	211.8	75.8	285	268.3	96.0
46	43.3	15.5	106	99.8	35.7	166	156.3	55.9	226	212.8	76.1	286	269.3	96.4
47	44.3	15.8	107	100.7	36.0	167	157.2	56.3	227	213.7	76.5	287	270.2	96.7
48	45.2	16.2	108	101.7	36.4	168	158.2	56.6	228	214.7	76.8	288	271.2	97.0
49	46.1	16.5	109	102.6	36.7	169	159.1	56.9	229	215.6	77.1	289	272.1	97.4
50	47.1	16.8	110	103.6	37.1	170	160.1	57.3	230	216.6	77.5	290	273.0	97.7
51	48.0	17.2	111	104.5	37.4	171	161.0	57.6	231	217.5	77.8	291	274.0	98.0
52	49.0	17.5	112	105.5	37.7	172	161.9	57.9	232	218.4	78.2	292	274.9	98.4
53	49.9	17.9	113	106.4	38.1	173	162.9	58.3	233	219.4	78.5	293	275.9	98.7
54	50.8	18.2	114	107.3	38.4	174	163.8	58.6	234	220.3	78.8	294	276.8	99.0
55	51.8	18.5	115	108.3	38.7	175	164.8	59.0	235	221.3	79.2	295	277.8	99.4
56	52.7	18.9	116	109.2	39.1	176	165.7	59.3	236	222.2	79.5	296	278.7	99.7
57	53.7	19.2	117	110.2	39.4	177	166.7	59.6	237	223.1	79.8	297	279.6	100.1
58	54.6	19.5	118	111.1	39.8	178	167.6	60.0	238	224.1	80.2	298	280.6	100.4
59	55.6	19.9	119	112.0	40.1	179	168.5	60.3	239	225.0	80.5	299	281.5	100.7
60	56.5	20.2	120	113.0	40.4	180	169.5	60.6	240	226.0	80.9	300	282.5	101.1
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.
E 0° N.			E 45° S.			W 45° S.			W 0° N.			or 1 1/2 Points.		

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NNE.			SSE.			SSW.			NNW,			or 2 Points.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.4	61	56.4	23.3	121	111.8	46.3	181	167.2	69.3	241	222.7	92.2
2	1.8	0.8	62	57.3	23.7	122	112.7	46.7	182	168.1	69.6	242	223.6	92.6
3	2.8	1.1	63	58.2	24.1	123	113.6	47.1	183	169.1	70.0	243	224.5	93.0
4	3.7	1.5	64	59.1	24.5	124	114.6	47.5	184	170.0	70.4	244	225.4	93.4
5	4.6	1.9	65	60.1	24.9	125	115.5	47.8	185	170.9	70.8	245	226.4	93.8
6	5.5	2.3	66	61.0	25.3	126	116.4	48.2	186	171.8	71.2	246	227.3	94.1
7	6.5	2.7	67	61.9	25.6	127	117.3	48.6	187	172.8	71.6	247	228.2	94.5
8	7.4	3.1	68	62.8	26.0	128	118.3	49.0	188	173.7	71.9	248	229.1	94.9
9	8.3	3.4	69	63.7	26.4	129	119.2	49.4	189	174.6	72.3	249	230.0	95.3
10	9.2	3.8	70	64.7	26.8	130	120.1	49.7	190	175.5	72.7	250	231.0	95.7
11	10.2	4.2	71	65.6	27.2	131	121.0	50.1	191	176.5	73.1	251	231.9	96.1
12	11.1	4.6	72	66.5	27.6	132	122.0	50.5	192	177.4	73.5	252	232.8	96.4
13	12.0	5.0	73	67.4	27.9	133	122.9	50.9	193	178.3	73.9	253	233.7	96.8
14	12.9	5.4	74	68.4	28.3	134	123.8	51.3	194	179.2	74.2	254	234.7	97.2
15	13.9	5.7	75	69.3	28.7	135	124.7	51.7	195	180.2	74.6	255	235.6	97.6
16	14.8	6.1	76	70.2	29.1	136	125.6	52.0	196	181.1	75.0	256	236.5	98.0
17	15.7	6.5	77	71.1	29.5	137	126.6	52.4	197	182.0	75.4	257	237.4	98.3
18	16.6	6.9	78	72.1	29.8	138	127.5	52.8	198	182.9	75.8	258	238.4	98.7
19	17.6	7.3	79	73.0	30.2	139	128.4	53.2	199	183.9	76.2	259	239.3	99.1
20	18.5	7.7	80	73.9	30.6	140	129.3	53.6	200	184.8	76.5	260	240.2	99.5
21	19.4	8.0	81	74.8	31.0	141	130.3	54.0	201	185.7	76.9	261	241.1	99.9
22	20.3	8.4	82	75.8	31.4	142	131.2	54.3	202	186.6	77.3	262	242.1	100.3
23	21.2	8.8	83	76.7	31.8	143	132.1	54.7	203	187.5	77.7	263	243.0	100.6
24	22.2	9.2	84	77.6	32.1	144	133.0	55.1	204	188.5	78.1	264	243.9	101.0
25	23.1	9.6	85	78.5	32.5	145	134.0	55.5	205	189.4	78.5	265	244.8	101.4
26	24.0	9.9	86	79.5	32.9	146	134.9	55.9	206	190.3	78.8	266	245.8	101.8
27	24.9	10.3	87	80.4	33.3	147	135.8	56.3	207	191.2	79.2	267	246.7	102.2
28	25.9	10.7	88	81.3	33.7	148	136.7	56.6	208	192.2	79.6	268	247.6	102.6
29	26.8	11.1	89	82.2	34.1	149	137.7	57.0	209	193.1	80.0	269	248.5	102.9
30	27.7	11.5	90	83.1	34.4	150	138.6	57.4	210	194.0	80.4	270	249.4	103.3
31	28.6	11.9	91	84.1	34.8	151	139.5	57.8	211	194.9	80.7	271	250.4	103.7
32	29.6	12.2	92	85.0	35.2	152	140.4	58.2	212	195.9	81.1	272	251.3	104.1
33	30.5	12.6	93	85.9	35.6	153	141.4	58.6	213	196.8	81.5	273	252.2	104.5
34	31.4	13.0	94	86.8	36.0	154	142.3	58.9	214	197.7	81.9	274	253.1	104.9
35	32.3	13.4	95	87.8	36.4	155	143.2	59.3	215	198.6	82.3	275	254.1	105.2
36	33.3	13.8	96	88.7	36.7	156	144.1	59.7	216	199.5	82.7	276	255.0	105.6
37	34.2	14.2	97	89.6	37.1	157	145.0	60.1	217	200.5	83.0	277	255.9	106.0
38	35.1	14.5	98	90.5	37.5	158	146.0	60.5	218	201.4	83.4	278	256.8	106.4
39	36.0	14.9	99	91.5	37.9	159	146.9	60.8	219	202.3	83.8	279	257.7	106.8
40	37.0	15.3	100	92.4	38.3	160	147.8	61.2	220	203.3	84.2	280	258.7	107.2
41	37.9	15.7	101	93.3	38.7	161	148.7	61.6	221	204.2	84.6	281	259.6	107.5
42	38.8	16.1	102	94.2	39.0	162	149.7	62.0	222	205.1	85.0	282	260.5	107.9
43	39.7	16.5	103	95.2	39.4	163	150.6	62.4	223	206.0	85.3	283	261.5	108.3
44	40.7	16.8	104	96.1	39.8	164	151.5	62.8	224	206.9	85.7	284	262.4	108.7
45	41.6	17.2	105	97.0	40.2	165	152.4	63.1	225	207.9	86.1	285	263.3	109.1
46	42.5	17.6	106	97.9	40.6	166	153.4	63.5	226	208.8	86.5	286	264.2	109.4
47	43.4	18.0	107	98.9	40.9	167	154.3	63.9	227	209.7	86.9	287	265.2	109.8
48	44.3	18.4	108	99.8	41.3	168	155.2	64.3	228	210.6	87.3	288	266.1	110.2
49	45.3	18.8	109	100.7	41.7	169	156.1	64.7	229	211.6	87.7	289	267.0	110.6
50	46.2	19.1	110	101.6	42.1	170	157.1	65.1	230	212.5	88.0	290	267.9	111.0
51	47.1	19.5	111	102.6	42.5	171	158.0	65.4	231	213.4	88.4	291	268.8	111.4
52	48.0	19.9	112	103.5	42.9	172	158.9	65.8	232	214.3	88.8	292	269.8	111.7
53	49.0	20.3	113	104.4	43.2	173	159.8	66.2	233	215.3	89.2	293	270.7	112.1
54	49.9	20.7	114	105.3	43.6	174	160.8	66.6	234	216.2	89.5	294	271.6	112.5
55	50.8	21.0	115	106.2	44.0	175	161.7	67.0	235	217.1	89.9	295	272.5	112.9
56	51.7	21.4	116	107.2	44.4	176	162.6	67.4	236	218.0	90.3	296	273.5	113.3
57	52.7	21.8	117	108.1	44.8	177	163.5	67.7	237	219.0	90.7	297	274.4	113.7
58	53.6	22.2	118	109.0	45.2	178	164.5	68.1	238	219.9	91.1	298	275.3	114.0
59	54.5	22.6	119	109.9	45.5	179	165.4	68.5	239	220.8	91.5	299	276.2	114.4
60	55.4	23.0	120	110.9	45.9	180	166.3	68.9	240	221.7	91.8	300	277.2	114.8
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NNE½E.			SSE½E.			SSW½W.			NNW½W.			or 2½ Points.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.4	61	55.1	26.1	121	109.4	51.7	181	163.6	77.4	241	217.9	103.0
2	1.8	0.9	62	56.0	26.5	122	110.3	52.2	182	164.5	77.8	242	218.8	103.5
3	2.7	1.3	63	57.0	26.9	123	111.2	52.6	183	165.4	78.2	243	219.7	103.9
4	3.6	1.7	64	57.9	27.4	124	112.1	53.0	184	166.3	78.7	244	220.6	104.3
5	4.5	2.1	65	58.8	27.8	125	113.0	53.4	185	167.2	79.1	245	221.5	104.8
6	5.4	2.6	66	59.7	28.2	126	113.9	53.9	186	168.1	79.5	246	222.4	105.2
7	6.3	3.0	67	60.6	28.6	127	114.8	54.3	187	169.0	80.0	247	223.3	105.6
8	7.2	3.4	68	61.5	29.1	128	115.7	54.7	188	169.9	80.4	248	224.2	106.0
9	8.1	3.8	69	62.4	29.5	129	116.6	55.2	189	170.9	80.8	249	225.1	106.5
10	9.0	4.3	70	63.3	29.9	130	117.5	55.6	190	171.8	81.2	250	226.0	106.9
11	9.9	4.7	71	64.2	30.4	131	118.4	56.0	191	172.7	81.7	251	226.9	107.3
12	10.8	5.1	72	65.1	30.8	132	119.3	56.4	192	173.6	82.1	252	227.8	107.7
13	11.8	5.6	73	66.0	31.2	133	120.2	56.9	193	174.5	82.5	253	228.7	108.2
14	12.7	6.0	74	66.9	31.6	134	121.1	57.3	194	175.4	82.9	254	229.6	108.6
15	13.6	6.4	75	67.8	32.1	135	122.0	57.7	195	176.3	83.4	255	230.5	109.0
16	14.5	6.8	76	68.7	32.5	136	122.9	58.1	196	177.2	83.8	256	231.4	109.5
17	15.4	7.3	77	69.6	32.9	137	123.8	58.6	197	178.1	84.2	257	232.3	109.9
18	16.3	7.7	78	70.5	33.3	138	124.8	59.0	198	179.0	84.7	258	233.2	110.3
19	17.2	8.1	79	71.4	33.8	139	125.7	59.4	199	179.9	85.1	259	234.1	110.7
20	18.1	8.6	80	72.3	34.2	140	126.6	59.9	200	180.8	85.5	260	235.0	111.2
21	19.0	9.0	81	73.2	34.6	141	127.5	60.3	201	181.7	85.9	261	235.9	111.6
22	19.9	9.4	82	74.1	35.1	142	128.4	60.7	202	182.6	86.4	262	236.8	112.0
23	20.8	9.8	83	75.0	35.5	143	129.3	61.1	203	183.5	86.8	263	237.7	112.4
24	21.7	10.3	84	75.9	35.9	144	130.2	61.6	204	184.4	87.2	264	238.6	112.9
25	22.6	10.7	85	76.8	36.3	145	131.1	62.0	205	185.3	87.6	265	239.5	113.3
26	23.5	11.1	86	77.7	36.8	146	132.0	62.4	206	186.2	88.1	266	240.4	113.7
27	24.4	11.5	87	78.6	37.2	147	132.9	62.9	207	187.1	88.5	267	241.3	114.2
28	25.3	12.0	88	79.5	37.6	148	133.8	63.3	208	188.0	88.9	268	242.2	114.6
29	26.2	12.4	89	80.4	38.1	149	134.7	63.7	209	188.9	89.4	269	243.1	115.0
30	27.1	12.8	90	81.3	38.5	150	135.6	64.1	210	189.8	89.8	270	244.0	115.4
31	28.0	13.3	91	82.2	38.9	151	136.5	64.6	211	190.7	90.2	271	244.9	115.9
32	28.9	13.7	92	83.1	39.3	152	137.4	65.0	212	191.6	90.6	272	245.8	116.3
33	29.8	14.1	93	84.1	39.8	153	138.3	65.4	213	192.5	91.1	273	246.7	116.7
34	30.7	14.5	94	85.0	40.2	154	139.2	65.8	214	193.5	91.5	274	247.6	117.2
35	31.6	15.0	95	85.9	40.6	155	140.1	66.3	215	194.4	91.9	275	248.5	117.6
36	32.5	15.4	96	86.8	41.0	156	141.0	66.7	216	195.3	92.4	276	249.4	118.0
37	33.4	15.8	97	87.7	41.5	157	141.9	67.1	217	196.2	92.8	277	250.3	118.4
38	34.3	16.2	98	88.6	41.9	158	142.8	67.6	218	197.1	93.2	278	251.2	118.9
39	35.2	16.7	99	89.5	42.3	159	143.7	68.0	219	198.0	93.6	279	252.1	119.3
40	36.2	17.1	100	90.4	42.8	160	144.6	68.4	220	198.9	94.1	280	253.0	119.7
41	37.1	17.5	101	91.3	43.2	161	145.5	68.8	221	199.8	94.5	281	253.9	120.1
42	38.0	18.0	102	92.2	43.6	162	146.4	69.3	222	200.7	94.9	282	254.8	120.6
43	38.9	18.4	103	93.1	44.0	163	147.4	69.7	223	201.6	95.3	283	255.7	121.0
44	39.8	18.8	104	94.0	44.5	164	148.3	70.1	224	202.5	95.8	284	256.6	121.4
45	40.7	19.2	105	94.9	44.9	165	149.2	70.5	225	203.4	96.2	285	257.5	121.9
46	41.6	19.7	106	95.8	45.3	166	150.1	71.0	226	204.3	96.6	286	258.4	122.3
47	42.5	20.1	107	96.7	45.7	167	151.0	71.4	227	205.2	97.1	287	259.3	122.7
48	43.4	20.5	108	97.6	46.2	168	151.9	71.8	228	206.1	97.5	288	260.2	123.1
49	44.3	21.0	109	98.5	46.6	169	152.8	72.3	229	207.0	97.9	289	261.1	123.6
50	45.2	21.4	110	99.4	47.0	170	153.7	72.7	230	207.9	98.3	290	262.0	124.0
51	46.1	21.8	111	100.3	47.5	171	154.6	73.1	231	208.8	98.8	291	262.9	124.4
52	47.0	22.2	112	101.2	47.9	172	155.5	73.5	232	209.7	99.2	292	263.8	124.8
53	47.9	22.7	113	102.2	48.3	173	156.4	74.0	233	210.6	99.6	293	264.7	125.3
54	48.8	23.1	114	103.1	48.7	174	157.3	74.4	234	211.5	100.0	294	265.6	125.7
55	49.7	23.5	115	104.0	49.2	175	158.2	74.8	235	212.4	100.5	295	266.5	126.1
56	50.6	23.9	116	104.9	49.6	176	159.1	75.2	236	213.3	100.9	296	267.4	126.6
57	51.5	24.4	117	105.8	50.0	177	160.0	75.7	237	214.2	101.3	297	268.3	127.0
58	52.4	24.8	118	106.7	50.5	178	160.9	76.1	238	215.1	101.8	298	269.2	127.4
59	53.3	25.2	119	107.6	50.9	179	161.8	76.5	239	216.0	102.2	299	270.1	127.8
60	54.2	25.7	120	108.5	51.3	180	162.7	77.0	240	217.0	102.6	300	271.0	128.3
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

NNE½E

SSE½E

SSW½W

NNW½W

or 2½ Points

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NNE½E.			SSE½E.			SSW½W.			NNW½W.			or 2½ Points.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.5	61	53.8	28.8	121	106.7	57.0	181	159.6	85.3	241	212.5	113.6
2	1.8	0.9	62	54.7	29.2	122	107.6	57.5	182	160.5	85.8	242	213.4	114.1
3	2.6	1.4	63	55.6	29.7	123	108.5	58.0	183	161.4	86.3	243	214.3	114.5
4	3.5	1.9	64	56.4	30.2	124	109.4	58.5	184	162.3	86.7	244	215.2	115.0
5	4.4	2.4	65	57.3	30.6	125	110.2	58.9	185	163.2	87.2	245	216.1	115.5
6	5.3	2.8	66	58.2	31.1	126	111.1	59.4	186	164.0	87.7	246	217.0	116.0
7	6.2	3.3	67	59.1	31.6	127	112.0	59.9	187	164.9	88.2	247	217.8	116.4
8	7.1	3.8	68	60.0	32.1	128	112.9	60.3	188	165.8	88.6	248	218.7	116.9
9	7.9	4.2	69	60.9	32.5	129	113.8	60.8	189	166.7	89.1	249	219.6	117.4
10	8.8	4.7	70	61.7	33.0	130	114.6	61.3	190	167.6	89.6	250	220.5	117.8
11	9.7	5.2	71	62.6	33.5	131	115.5	61.8	191	168.4	90.0	251	221.4	118.3
12	10.6	5.7	72	63.5	33.9	132	116.4	62.2	192	169.3	90.5	252	222.2	118.8
13	11.5	6.1	73	64.4	34.4	133	117.3	62.7	193	170.2	91.0	253	223.1	119.3
14	12.3	6.6	74	65.3	34.9	134	118.2	63.2	194	171.1	91.5	254	224.0	119.7
15	13.2	7.1	75	66.1	35.4	135	119.1	63.6	195	172.0	91.9	255	224.9	120.2
16	14.1	7.5	76	67.0	35.8	136	119.9	64.1	196	172.9	92.4	256	225.8	120.7
17	15.0	8.0	77	67.9	36.3	137	120.8	64.6	197	173.7	92.9	257	226.7	121.1
18	15.9	8.5	78	68.8	36.8	138	121.7	65.1	198	174.6	93.3	258	227.5	121.6
19	16.8	9.0	79	69.7	37.2	139	122.6	65.5	199	175.5	93.8	259	228.4	122.1
20	17.6	9.4	80	70.6	37.7	140	123.5	66.0	200	176.4	94.3	260	229.3	122.6
21	18.5	9.9	81	71.4	38.2	141	124.4	66.5	201	177.3	94.8	261	230.2	123.0
22	19.4	10.4	82	72.3	38.7	142	125.2	66.9	202	178.1	95.2	262	231.1	123.5
23	20.3	10.8	83	73.2	39.1	143	126.1	67.4	203	179.0	95.7	263	231.9	124.0
24	21.2	11.3	84	74.1	39.6	144	127.0	67.9	204	179.9	96.2	264	232.8	124.4
25	22.0	11.8	85	75.0	40.1	145	127.9	68.4	205	180.8	96.6	265	233.7	124.9
26	22.9	12.3	86	75.8	40.5	146	128.8	68.8	206	181.7	97.1	266	234.6	125.4
27	23.8	12.7	87	76.7	41.0	147	129.6	69.3	207	182.6	97.6	267	235.5	125.9
28	24.7	13.2	88	77.6	41.5	148	130.5	69.8	208	183.4	98.1	268	236.4	126.3
29	25.6	13.7	89	78.5	42.0	149	131.4	70.2	209	184.3	98.5	269	237.2	126.8
30	26.5	14.1	90	79.4	42.4	150	132.3	70.7	210	185.2	99.0	270	238.1	127.3
31	27.3	14.6	91	80.3	42.9	151	133.2	71.2	211	186.1	99.5	271	239.0	127.7
32	28.2	15.1	92	81.1	43.4	152	134.1	71.7	212	187.0	99.9	272	239.9	128.2
33	29.1	15.6	93	82.0	43.8	153	134.9	72.1	213	187.8	100.4	273	240.8	128.7
34	30.0	16.0	94	82.9	44.3	154	135.8	72.6	214	188.7	100.9	274	241.6	129.2
35	30.9	16.5	95	83.8	44.8	155	136.7	73.1	215	189.6	101.4	275	242.5	129.6
36	31.7	17.0	96	84.7	45.3	156	137.6	73.5	216	190.5	101.8	276	243.4	130.1
37	32.6	17.4	97	85.5	45.7	157	138.5	74.0	217	191.4	102.3	277	244.3	130.6
38	33.5	17.9	98	86.4	46.2	158	139.3	74.5	218	192.3	102.8	278	245.2	131.0
39	34.4	18.4	99	87.3	46.7	159	140.2	75.0	219	193.1	103.2	279	246.1	131.5
40	35.3	18.9	100	88.2	47.1	160	141.1	75.4	220	194.0	103.7	280	246.9	132.0
41	36.2	19.3	101	89.1	47.6	161	142.0	75.9	221	194.9	104.2	281	247.8	132.5
42	37.0	19.8	102	90.0	48.1	162	142.9	76.4	222	195.8	104.7	282	248.7	132.9
43	37.9	20.3	103	90.8	48.6	163	143.8	76.8	223	196.7	105.1	283	249.6	133.4
44	38.8	20.7	104	91.7	49.0	164	144.6	77.3	224	197.6	105.6	284	250.5	133.9
45	39.7	21.2	105	92.6	49.5	165	145.5	77.8	225	198.4	106.1	285	251.3	134.3
46	40.6	21.7	106	93.5	50.0	166	146.4	78.3	226	199.3	106.5	286	252.2	134.8
47	41.5	22.2	107	94.4	50.4	167	147.3	78.7	227	200.2	107.0	287	253.1	135.3
48	42.3	22.6	108	95.2	50.9	168	148.2	79.2	228	201.1	107.5	288	254.0	135.8
49	43.2	23.1	109	96.1	51.4	169	149.0	79.7	229	202.0	107.9	289	254.9	136.2
50	44.1	23.6	110	97.0	51.9	170	149.9	80.1	230	202.8	108.4	290	255.8	136.7
51	45.0	24.0	111	97.9	52.3	171	150.8	80.6	231	203.7	108.9	291	256.6	137.2
52	45.9	24.5	112	98.8	52.8	172	151.7	81.1	232	204.6	109.4	292	257.5	137.6
53	46.7	25.0	113	99.7	53.3	173	152.6	81.6	233	205.5	109.8	293	258.4	138.1
54	47.6	25.5	114	100.5	53.7	174	153.5	82.0	234	206.4	110.3	294	259.3	138.6
55	48.5	25.9	115	101.4	54.2	175	154.3	82.5	235	207.3	110.8	295	260.2	139.1
56	49.4	26.4	116	102.3	54.7	176	155.2	83.0	236	208.1	111.2	296	261.0	139.5
57	50.3	26.9	117	103.2	55.2	177	156.1	83.4	237	209.0	111.7	297	261.9	140.0
58	51.2	27.3	118	104.1	55.6	178	157.0	83.9	238	209.9	112.2	298	262.8	140.5
59	52.0	27.8	119	104.9	56.1	179	157.9	84.4	239	210.8	112.7	299	263.7	140.9
60	52.9	28.3	120	105.8	56.6	180	158.7	84.9	240	211.7	113.1	300	264.6	141.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.
NE½E.			SE½E.			SW½W.			NW½W.			or 5½ Points.		

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NNE½E.			SSE½E.			SSW½W.			NNW½W,			or 2½ Points.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.5	61	52.3	31.4	121	103.8	62.2	181	155.2	93.1	241	206.7	123.9
2	1.7	1.0	62	53.2	31.9	122	104.6	62.7	182	156.1	93.6	242	207.6	124.4
3	2.6	1.5	63	54.0	32.4	123	105.5	63.2	183	157.0	94.1	243	208.4	124.9
4	3.4	2.1	64	54.9	32.9	124	106.4	63.7	184	157.8	94.6	244	209.3	125.4
5	4.3	2.6	65	55.8	33.4	125	107.2	64.3	185	158.7	95.1	245	210.1	126.0
6	5.1	3.1	66	56.6	33.9	126	108.1	64.8	186	159.5	95.6	246	211.0	126.5
7	6.0	3.6	67	57.5	34.4	127	108.9	65.3	187	160.4	96.1	247	211.9	127.0
8	6.9	4.1	68	58.3	35.0	128	109.8	65.8	188	161.3	96.7	248	212.7	127.5
9	7.7	4.6	69	59.2	35.5	129	110.6	66.3	189	162.1	97.2	249	213.6	128.0
10	8.6	5.1	70	60.0	36.0	130	111.5	66.8	190	163.0	97.7	250	214.4	128.5
11	9.4	5.7	71	60.9	36.5	131	112.4	67.3	191	163.8	98.2	251	215.3	129.0
12	10.3	6.2	72	61.8	37.0	132	113.2	67.9	192	164.7	98.7	252	216.1	129.6
13	11.2	6.7	73	62.6	37.5	133	114.1	68.4	193	165.5	99.2	253	217.0	130.1
14	12.0	7.2	74	63.5	38.0	134	114.9	68.9	194	166.4	99.7	254	217.9	130.6
15	12.9	7.7	75	64.3	38.6	135	115.8	69.4	195	167.3	100.3	255	218.7	131.1
16	13.7	8.2	76	65.2	39.1	136	116.7	69.9	196	168.1	100.8	256	219.6	131.6
17	14.6	8.7	77	66.0	39.6	137	117.5	70.4	197	169.0	101.3	257	220.4	132.1
18	15.4	9.3	78	66.9	40.1	138	118.4	70.9	198	169.8	101.8	258	221.3	132.6
19	16.3	9.8	79	67.8	40.6	139	119.2	71.5	199	170.7	102.3	259	222.2	133.2
20	17.2	10.3	80	68.6	41.1	140	120.1	72.0	200	171.5	102.8	260	223.0	133.7
21	18.0	10.8	81	69.5	41.6	141	120.9	72.5	201	172.4	103.3	261	223.9	134.2
22	18.9	11.3	82	70.3	42.2	142	121.8	73.0	202	173.3	103.8	262	224.7	134.7
23	19.7	11.8	83	71.2	42.7	143	122.7	73.5	203	174.1	104.4	263	225.6	135.2
24	20.6	12.3	84	72.0	43.2	144	123.5	74.0	204	175.0	104.9	264	226.4	135.7
25	21.4	12.9	85	72.9	43.7	145	124.4	74.5	205	175.8	105.4	265	227.3	136.2
26	22.3	13.4	86	73.8	44.2	146	125.2	75.1	206	176.7	105.9	266	228.2	136.8
27	23.2	13.9	87	74.6	44.7	147	126.1	75.6	207	177.5	106.4	267	229.0	137.3
28	24.0	14.4	88	75.5	45.2	148	126.9	76.1	208	178.4	106.9	268	229.9	137.8
29	24.9	14.9	89	76.3	45.8	149	127.8	76.6	209	179.3	107.4	269	230.7	138.3
30	25.7	15.4	90	77.2	46.3	150	128.7	77.1	210	180.1	108.0	270	231.6	138.8
31	26.6	15.9	91	78.1	46.8	151	129.5	77.6	211	181.0	108.5	271	232.4	139.3
32	27.4	16.5	92	78.9	47.3	152	130.4	78.1	212	181.8	109.0	272	233.3	139.8
33	28.3	17.0	93	79.8	47.8	153	131.2	78.7	213	182.7	109.5	273	234.2	140.4
34	29.2	17.5	94	80.6	48.3	154	132.1	79.2	214	183.6	110.0	274	235.0	140.9
35	30.0	18.0	95	81.5	48.8	155	132.9	79.7	215	184.4	110.5	275	235.9	141.4
36	30.9	18.5	96	82.3	49.4	156	133.8	80.2	216	185.3	111.0	276	236.7	141.9
37	31.7	19.0	97	83.2	49.9	157	134.7	80.7	217	186.1	111.6	277	237.6	142.4
38	32.6	19.5	98	84.1	50.4	158	135.5	81.2	218	187.0	112.1	278	238.4	142.9
39	33.5	20.1	99	84.9	50.9	159	136.4	81.7	219	187.8	112.6	279	239.3	143.4
40	34.3	20.6	100	85.8	51.4	160	137.2	82.3	220	188.7	113.1	280	240.2	143.9
41	35.2	21.1	101	86.6	51.9	161	138.1	82.8	221	189.6	113.6	281	241.0	144.5
42	36.0	21.6	102	87.5	52.4	162	139.0	83.3	222	190.4	114.1	282	241.9	145.0
43	36.9	22.1	103	88.3	53.0	163	139.8	83.8	223	191.3	114.6	283	242.7	145.5
44	37.7	22.6	104	89.2	53.5	164	140.7	84.3	224	192.1	115.2	284	243.6	146.0
45	38.6	23.1	105	90.1	54.0	165	141.5	84.8	225	193.0	115.7	285	244.5	146.5
46	39.5	23.6	106	90.9	54.5	166	142.4	85.3	226	193.8	116.2	286	245.3	147.0
47	40.3	24.2	107	91.8	55.0	167	143.2	85.9	227	194.7	116.7	287	246.2	147.5
48	41.2	24.7	108	92.6	55.5	168	144.1	86.4	228	195.6	117.2	288	247.0	148.1
49	42.0	25.2	109	93.5	56.0	169	145.0	86.9	229	196.4	117.7	289	247.9	148.6
50	42.9	25.7	110	94.4	56.6	170	145.8	87.4	230	197.3	118.2	290	248.7	149.1
51	43.7	26.2	111	95.2	57.1	171	146.7	87.9	231	198.1	118.8	291	249.6	149.6
52	44.6	26.7	112	96.1	57.6	172	147.5	88.4	232	199.0	119.3	292	250.5	150.1
53	45.5	27.2	113	96.9	58.1	173	148.4	88.9	233	199.9	119.8	293	251.3	150.6
54	46.3	27.8	114	97.8	58.6	174	149.2	89.5	234	200.7	120.5	294	252.2	151.1
55	47.2	28.3	115	98.6	59.1	175	150.1	90.0	235	201.6	120.8	295	253.0	151.7
56	48.0	28.8	116	99.5	59.6	176	151.0	90.5	236	202.4	121.3	296	253.9	152.2
57	48.9	29.3	117	100.4	60.2	177	151.8	91.0	237	203.3	121.8	297	254.7	152.7
58	49.7	29.8	118	101.2	60.7	178	152.7	91.5	238	204.1	122.4	298	255.6	153.2
59	50.6	30.3	119	102.1	61.2	179	153.5	92.0	239	205.0	122.9	299	256.5	153.7
60	51.5	30.8	120	102.9	61.7	180	154.4	92.5	240	205.9	123.4	300	257.3	154.2
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.
NEAR½E.			SEAR½E.			SW½W½W.			NW½W½W,			or 5½ Points.		

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NE.N.			SE.S.			SW.S.			NW.N.			or 3 Points.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.8	0.6	61	50.7	33.9	121	100.6	67.2	181	150.5	100.5	241	200.4	133.9
2	1.7	1.1	62	51.6	34.4	122	101.4	67.8	182	151.3	101.1	242	201.2	134.4
3	2.5	1.7	63	52.4	35.0	123	102.3	68.3	183	152.2	101.7	243	202.0	135.0
4	3.3	2.2	64	53.2	35.6	124	103.1	68.9	184	153.0	102.2	244	202.9	135.5
5	4.2	2.8	65	54.0	36.1	125	103.9	69.4	185	153.8	102.8	245	203.7	136.1
6	5.0	3.3	66	54.9	36.7	126	104.8	70.0	186	154.7	103.3	246	204.5	136.7
7	5.8	3.9	67	55.7	37.2	127	105.6	70.5	187	155.5	103.9	247	205.4	137.2
8	6.7	4.4	68	56.5	37.8	128	106.4	71.1	188	156.3	104.4	248	206.2	137.8
9	7.5	5.0	69	57.4	38.3	129	107.3	71.7	189	157.1	105.0	249	207.0	138.3
10	8.3	5.6	70	58.2	38.9	130	108.1	72.2	190	158.0	105.5	250	207.9	138.9
11	9.1	6.1	71	59.0	39.4	131	108.9	72.8	191	158.8	106.1	251	208.7	139.4
12	10.0	6.7	72	59.9	40.0	132	109.8	73.3	192	159.6	106.7	252	209.5	140.0
13	10.8	7.2	73	60.7	40.6	133	110.6	73.9	193	160.5	107.2	253	210.4	140.5
14	11.6	7.8	74	61.5	41.1	134	111.4	74.4	194	161.3	107.8	254	211.2	141.1
15	12.5	8.3	75	62.4	41.7	135	112.2	75.0	195	162.1	108.3	255	212.0	141.7
16	13.3	8.9	76	63.2	42.2	136	113.1	75.5	196	163.0	108.9	256	212.9	142.2
17	14.1	9.4	77	64.0	42.8	137	113.9	76.1	197	163.8	109.4	257	213.7	142.8
18	15.0	10.0	78	64.9	43.3	138	114.7	76.7	198	164.6	110.0	258	214.5	143.3
19	15.8	10.6	79	65.7	43.9	139	115.6	77.2	199	165.5	110.5	259	215.4	143.9
20	16.6	11.1	80	66.5	44.4	140	116.4	77.8	200	166.3	111.1	260	216.2	144.4
21	17.5	11.7	81	67.3	45.0	141	117.2	78.3	201	167.1	111.7	261	217.0	145.0
22	18.3	12.2	82	68.2	45.6	142	118.1	78.9	202	168.0	112.2	262	217.8	145.5
23	19.1	12.8	83	69.0	46.1	143	118.9	79.4	203	168.8	112.8	263	218.7	146.1
24	20.0	13.3	84	69.8	46.7	144	119.7	80.0	204	169.6	113.3	264	219.5	146.7
25	20.8	13.9	85	70.7	47.2	145	120.6	80.5	205	170.5	113.9	265	220.3	147.2
26	21.6	14.4	86	71.5	47.8	146	121.4	81.1	206	171.3	114.4	266	221.2	147.8
27	22.4	15.0	87	72.3	48.3	147	122.2	81.7	207	172.1	115.0	267	222.0	148.3
28	23.3	15.6	88	73.2	48.9	148	123.1	82.2	208	172.9	115.5	268	222.8	148.9
29	24.1	16.1	89	74.0	49.4	149	123.9	82.8	209	173.8	116.1	269	223.7	149.4
30	24.9	16.7	90	74.8	50.0	150	124.7	83.3	210	174.6	116.7	270	224.5	150.0
31	25.8	17.2	91	75.7	50.6	151	125.6	83.9	211	175.4	117.2	271	225.3	150.5
32	26.6	17.8	92	76.5	51.1	152	126.4	84.4	212	176.3	117.8	272	226.2	151.1
33	27.4	18.3	93	77.3	51.7	153	127.2	85.0	213	177.1	118.3	273	227.0	151.7
34	28.3	18.9	94	78.2	52.2	154	128.0	85.5	214	177.9	118.9	274	227.8	152.2
35	29.1	19.4	95	79.0	52.8	155	128.9	86.1	215	178.8	119.4	275	228.7	152.8
36	29.9	20.0	96	79.8	53.3	156	129.7	86.7	216	179.6	120.0	276	229.5	153.3
37	30.8	20.6	97	80.7	53.9	157	130.5	87.2	217	180.4	120.5	277	230.3	153.9
38	31.6	21.1	98	81.5	54.4	158	131.4	87.8	218	181.3	121.1	278	231.1	154.4
39	32.4	21.7	99	82.3	55.0	159	132.2	88.3	219	182.1	121.7	279	232.0	155.0
40	33.3	22.2	100	83.1	55.6	160	133.0	88.9	220	182.9	122.2	280	232.8	155.5
41	34.1	22.8	101	84.0	56.1	161	133.9	89.4	221	183.8	122.8	281	233.6	156.1
42	34.9	23.3	102	84.8	56.7	162	134.7	90.0	222	184.6	123.3	282	234.5	156.7
43	35.8	23.9	103	85.6	57.2	163	135.5	90.5	223	185.4	123.9	283	235.3	157.2
44	36.6	24.4	104	86.5	57.8	164	136.4	91.1	224	186.2	124.4	284	236.1	157.8
45	37.4	25.0	105	87.3	58.3	165	137.2	91.7	225	187.1	125.0	285	237.0	158.3
46	38.2	25.6	106	88.1	58.9	166	138.0	92.2	226	187.9	125.5	286	237.8	158.9
47	39.1	26.1	107	89.0	59.4	167	138.9	92.8	227	188.7	126.1	287	238.6	159.4
48	39.9	26.7	108	89.8	60.0	168	139.7	93.3	228	189.6	126.7	288	239.5	160.0
49	40.7	27.2	109	90.6	60.6	169	140.5	93.9	229	190.4	127.2	289	240.3	160.5
50	41.6	27.8	110	91.5	61.1	170	141.3	94.4	230	191.2	127.8	290	241.1	161.1
51	42.4	28.3	111	92.3	61.7	171	142.2	95.0	231	192.1	128.3	291	242.0	161.7
52	43.2	28.9	112	93.1	62.2	172	143.0	95.5	232	192.9	128.9	292	242.8	162.2
53	44.1	29.4	113	94.0	62.8	173	143.8	96.1	233	193.7	129.4	293	243.6	162.8
54	44.9	30.0	114	94.8	63.3	174	144.7	96.7	234	194.6	130.0	294	244.5	163.3
55	45.7	30.6	115	95.6	63.9	175	145.5	97.2	235	195.4	130.5	295	245.3	163.9
56	46.6	31.1	116	96.5	64.4	176	146.3	97.8	236	196.2	131.1	296	246.1	164.4
57	47.4	31.7	117	97.3	65.0	177	147.2	98.3	237	197.1	131.7	297	246.9	165.0
58	48.2	32.2	118	98.1	65.5	178	148.0	98.9	238	197.9	132.2	298	247.8	165.5
59	49.1	32.8	119	98.9	66.1	179	148.8	99.4	239	198.7	132.8	299	248.6	166.1
60	49.9	33.3	120	99.8	66.7	180	149.7	100.0	240	199.6	133.3	300	249.4	166.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat
NE.E.			SE.E.			SW.W.			NW.W.			or 5 Points.		

TABLE XII.

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TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NE½N.			SE½S.			SW½S.			NW½N.			or 34 Points.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.8	0.6	61	49.0	36.3	121	97.2	72.1	181	145.4	107.8	241	193.6	143.6
2	1.6	1.2	62	49.8	36.9	122	98.0	72.7	182	146.2	108.4	242	194.4	144.2
3	2.4	1.8	63	50.6	37.5	123	98.8	73.3	183	147.0	109.0	243	195.2	144.8
4	3.2	2.4	64	51.4	38.1	124	99.6	73.9	184	147.8	109.6	244	196.0	145.4
5	4.0	3.0	65	52.2	38.7	125	100.4	74.5	185	148.6	110.2	245	196.8	145.9
6	4.8	3.6	66	53.0	39.3	126	101.2	75.1	186	149.4	110.8	246	197.6	146.5
7	5.6	4.2	67	53.8	39.9	127	102.0	75.7	187	150.2	111.4	247	198.4	147.1
8	6.4	4.8	68	54.6	40.5	128	102.8	76.2	188	151.0	112.0	248	199.2	147.7
9	7.2	5.4	69	55.4	41.1	129	103.6	76.8	189	151.8	112.6	249	200.0	148.3
10	8.0	6.0	70	56.2	41.7	130	104.4	77.4	190	152.6	113.2	250	200.8	148.9
11	8.8	6.6	71	57.0	42.3	131	105.2	78.0	191	153.4	113.8	251	201.6	149.5
12	9.6	7.1	72	57.8	42.9	132	106.0	78.6	192	154.2	114.4	252	202.4	150.1
13	10.4	7.7	73	58.6	43.5	133	106.8	79.2	193	155.0	115.0	253	203.2	150.7
14	11.2	8.3	74	59.4	44.1	134	107.6	79.8	194	155.8	115.6	254	204.0	151.3
15	12.0	8.9	75	60.2	44.7	135	108.4	80.4	195	156.6	116.2	255	204.8	151.9
16	12.9	9.5	76	61.0	45.3	136	109.2	81.0	196	157.4	116.8	256	205.6	152.5
17	13.7	10.1	77	61.8	45.9	137	110.0	81.6	197	158.2	117.4	257	206.4	153.1
18	14.5	10.7	78	62.7	46.5	138	110.8	82.2	198	159.0	117.9	258	207.2	153.7
19	15.3	11.3	79	63.5	47.1	139	111.6	82.8	199	159.8	118.5	259	208.0	154.3
20	16.1	11.9	80	64.3	47.7	140	112.4	83.4	200	160.6	119.1	260	208.8	154.9
21	16.9	12.5	81	65.1	48.3	141	113.3	84.0	201	161.4	119.7	261	209.6	155.5
22	17.7	13.1	82	65.9	48.8	142	114.1	84.6	202	162.2	120.3	262	210.4	156.1
23	18.5	13.7	83	66.7	49.4	143	114.9	85.2	203	163.1	120.9	263	211.2	156.7
24	19.3	14.3	84	67.5	50.0	144	115.7	85.8	204	163.9	121.5	264	212.0	157.3
25	20.1	14.9	85	68.3	50.6	145	116.5	86.4	205	164.7	122.1	265	212.8	157.9
26	20.9	15.5	86	69.1	51.2	146	117.3	87.0	206	165.5	122.7	266	213.7	158.5
27	21.7	16.1	87	69.9	51.8	147	118.1	87.6	207	166.3	123.3	267	214.5	159.1
28	22.5	16.7	88	70.7	52.4	148	118.9	88.2	208	167.1	123.9	268	215.3	159.6
29	23.3	17.3	89	71.5	53.0	149	119.7	88.8	209	167.9	124.5	269	216.1	160.2
30	24.1	17.9	90	72.3	53.6	150	120.5	89.4	210	168.7	125.1	270	216.9	160.8
31	24.9	18.5	91	73.1	54.2	151	121.3	90.0	211	169.5	125.7	271	217.7	161.4
32	25.7	19.1	92	73.9	54.8	152	122.1	90.5	212	170.3	126.3	272	218.5	162.0
33	26.5	19.7	93	74.7	55.4	153	122.9	91.1	213	171.1	126.9	273	219.3	162.6
34	27.3	20.3	94	75.5	56.0	154	123.7	91.7	214	171.9	127.5	274	220.1	163.2
35	28.1	20.8	95	76.3	56.6	155	124.5	92.3	215	172.7	128.1	275	220.9	163.8
36	28.9	21.4	96	77.1	57.2	156	125.3	92.9	216	173.5	128.7	276	221.7	164.4
37	29.7	22.0	97	77.9	57.8	157	126.1	93.5	217	174.3	129.3	277	222.5	165.0
38	30.5	22.6	98	78.7	58.4	158	126.9	94.1	218	175.1	129.9	278	223.3	165.6
39	31.3	23.2	99	79.5	59.0	159	127.7	94.7	219	175.9	130.5	279	224.1	166.2
40	32.1	23.8	100	80.3	59.6	160	128.5	95.3	220	176.7	131.1	280	224.9	166.8
41	32.9	24.4	101	81.1	60.2	161	129.3	95.9	221	177.5	131.6	281	225.7	167.4
42	33.7	25.0	102	81.9	60.8	162	130.1	96.5	222	178.3	132.2	282	226.5	168.0
43	34.5	25.6	103	82.7	61.4	163	130.9	97.1	223	179.1	132.8	283	227.3	168.6
44	35.3	26.2	104	83.5	62.0	164	131.7	97.7	224	179.9	133.4	284	228.1	169.2
45	36.1	26.8	105	84.3	62.5	165	132.5	98.3	225	180.7	134.0	285	228.9	169.8
46	36.9	27.4	106	85.1	63.1	166	133.3	98.9	226	181.5	134.6	286	229.7	170.4
47	37.8	28.0	107	85.9	63.7	167	134.1	99.5	227	182.3	135.2	287	230.5	171.0
48	38.6	28.6	108	86.7	64.3	168	134.9	100.1	228	183.1	135.8	288	231.3	171.6
49	39.4	29.2	109	87.5	64.9	169	135.7	100.7	229	183.9	136.4	289	232.1	172.2
50	40.2	29.8	110	88.4	65.5	170	136.5	101.3	230	184.7	137.0	290	232.9	172.8
51	41.0	30.4	111	89.2	66.1	171	137.3	101.9	231	185.5	137.6	291	233.7	173.3
52	41.8	31.0	112	90.0	66.7	172	138.2	102.5	232	186.3	138.2	292	234.5	173.9
53	42.6	31.6	113	90.8	67.3	173	139.0	103.1	233	187.1	138.8	293	235.3	174.5
54	43.4	32.2	114	91.6	67.9	174	139.8	103.7	234	188.0	139.4	294	236.1	175.1
55	44.2	32.8	115	92.4	68.5	175	140.6	104.2	235	188.8	140.0	295	236.9	175.7
56	45.0	33.4	116	93.2	69.1	176	141.4	104.8	236	189.6	140.6	296	237.7	176.3
57	45.8	34.0	117	94.0	69.7	177	142.2	105.4	237	190.4	141.2	297	238.6	176.9
58	46.6	34.6	118	94.8	70.3	178	143.0	106.0	238	191.2	141.8	298	239.4	177.5
59	47.4	35.2	119	95.6	70.9	179	143.8	106.6	239	192.0	142.4	299	240.2	178.1
60	48.2	35.7	120	96.4	71.5	180	144.6	107.2	240	192.8	143.0	300	241.0	178.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NE½N.			SE½S.			SW½S.			NW½N.			or 3½ Points.		
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.8	0.6	61	47.2	38.7	121	93.5	76.8	181	139.9	114.8	241	186.8	152.9
2	1.5	1.3	62	47.9	39.3	122	94.3	77.4	182	140.7	115.5	242	187.1	153.5
3	2.3	1.9	63	48.7	40.0	123	95.1	78.0	183	141.5	116.1	243	187.8	154.2
4	3.1	2.5	64	49.5	40.6	124	95.9	78.7	184	142.2	116.7	244	188.6	154.8
5	3.9	3.2	65	50.2	41.2	125	96.6	79.3	185	143.0	117.4	245	189.4	155.4
6	4.6	3.8	66	51.0	41.9	126	97.4	79.9	186	143.8	118.0	246	190.2	156.1
7	5.4	4.4	67	51.8	42.5	127	98.2	80.6	187	144.6	118.6	247	190.9	156.7
8	6.2	5.1	68	52.6	43.1	128	98.9	81.2	188	145.3	119.3	248	191.7	157.3
9	7.0	5.7	69	53.3	43.8	129	99.7	81.8	189	146.1	119.9	249	192.5	158.0
10	7.7	6.3	70	54.1	44.4	130	100.5	82.5	190	146.9	120.5	250	193.3	158.6
11	8.5	7.0	71	54.9	45.0	131	101.3	83.1	191	147.6	121.2	251	194.0	159.2
12	9.3	7.6	72	55.7	45.7	132	102.0	83.7	192	148.4	121.8	252	194.8	159.9
13	10.0	8.2	73	56.4	46.3	133	102.8	84.4	193	149.2	122.4	253	195.6	160.5
14	10.8	8.9	74	57.2	46.9	134	103.6	85.0	194	150.0	123.1	254	196.3	161.1
15	11.6	9.5	75	58.0	47.6	135	104.4	85.6	195	150.7	123.7	255	197.1	161.8
16	12.4	10.2	76	58.7	48.2	136	105.1	86.3	196	151.5	124.3	256	197.9	162.4
17	13.1	10.8	77	59.5	48.8	137	105.9	86.9	197	152.3	125.0	257	198.7	163.0
18	13.9	11.4	78	60.3	49.5	138	106.7	87.5	198	153.1	125.6	258	199.4	163.7
19	14.7	12.1	79	61.1	50.1	139	107.4	88.2	199	153.8	126.2	259	200.2	164.3
20	15.5	12.7	80	61.8	50.8	140	108.2	88.8	200	154.6	126.9	260	201.0	164.9
21	16.2	13.3	81	62.6	51.4	141	109.0	89.4	201	155.4	127.5	261	201.8	165.6
22	17.0	14.0	82	63.4	52.0	142	109.8	90.1	202	156.1	128.1	262	202.5	166.2
23	17.8	14.6	83	64.2	52.7	143	110.5	90.7	203	156.9	128.8	263	203.3	166.8
24	18.6	15.2	84	64.9	53.3	144	111.3	91.4	204	157.7	129.4	264	204.1	167.5
25	19.3	15.9	85	65.7	53.9	145	112.1	92.0	205	158.5	130.1	265	204.8	168.1
26	20.1	16.5	86	66.5	54.6	146	112.9	92.6	206	159.2	130.7	266	205.6	168.7
27	20.9	17.1	87	67.3	55.2	147	113.6	93.3	207	160.0	131.3	267	206.4	169.4
28	21.6	17.8	88	68.0	55.8	148	114.4	93.9	208	160.8	132.0	268	207.2	170.0
29	22.4	18.4	89	68.8	56.5	149	115.2	94.5	209	161.6	132.6	269	207.9	170.7
30	23.2	19.0	90	69.6	57.1	150	116.0	95.2	210	162.3	133.2	270	208.7	171.3
31	24.0	19.7	91	70.3	57.7	151	116.7	95.8	211	163.1	133.9	271	209.5	171.9
32	24.7	20.3	92	71.1	58.4	152	117.5	96.4	212	163.9	134.5	272	210.3	172.6
33	25.5	20.9	93	71.9	59.0	153	118.3	97.1	213	164.7	135.1	273	211.0	173.2
34	26.3	21.6	94	72.7	59.6	154	119.0	97.7	214	165.4	135.8	274	211.8	173.8
35	27.1	22.2	95	73.4	60.3	155	119.8	98.3	215	166.2	136.4	275	212.6	174.5
36	27.8	22.8	96	74.2	60.9	156	120.6	99.0	216	167.0	137.0	276	213.4	175.1
37	28.6	23.5	97	75.0	61.5	157	121.4	99.6	217	167.7	137.7	277	214.1	175.7
38	29.4	24.1	98	75.8	62.2	158	122.1	100.2	218	168.5	138.3	278	214.9	176.4
39	30.1	24.7	99	76.5	62.8	159	122.9	100.9	219	169.3	138.9	279	215.7	177.0
40	30.9	25.4	100	77.3	63.4	160	123.7	101.5	220	170.1	139.6	280	216.4	177.6
41	31.7	26.0	101	78.1	64.1	161	124.5	102.1	221	170.8	140.2	281	217.2	178.3
42	32.5	26.6	102	78.8	64.7	162	125.2	102.8	222	171.6	140.8	282	218.0	178.9
43	33.2	27.3	103	79.6	65.3	163	126.0	103.4	223	172.4	141.5	283	218.8	179.5
44	34.0	27.9	104	80.4	66.0	164	126.8	104.0	224	173.2	142.1	284	219.5	180.2
45	34.8	28.5	105	81.2	66.6	165	127.5	104.7	225	173.9	142.7	285	220.3	180.8
46	35.6	29.2	106	81.9	67.2	166	128.3	105.3	226	174.7	143.4	286	221.1	181.4
47	36.3	29.8	107	82.7	67.9	167	129.1	105.9	227	175.5	144.0	287	221.9	182.1
48	37.1	30.5	108	83.5	68.5	168	129.9	106.6	228	176.2	144.6	288	222.6	182.7
49	37.9	31.1	109	84.3	69.1	169	130.6	107.2	229	177.0	145.3	289	223.4	183.3
50	38.7	31.7	110	85.0	69.8	170	131.4	107.8	230	177.8	145.9	290	224.2	184.0
51	39.4	32.4	111	85.8	70.4	171	132.2	108.5	231	178.6	146.5	291	224.9	184.6
52	40.2	33.0	112	86.6	71.1	172	133.0	109.1	232	179.3	147.2	292	225.7	185.2
53	41.0	33.6	113	87.4	71.7	173	133.7	109.8	233	180.1	147.8	293	226.5	185.9
54	41.7	34.3	114	88.1	72.3	174	134.5	110.4	234	180.9	148.4	294	227.3	186.5
55	42.5	34.9	115	88.9	73.0	175	135.3	111.0	235	181.7	149.1	295	228.0	187.1
56	43.3	35.5	116	89.7	73.6	176	136.0	111.7	236	182.4	149.7	296	228.8	187.8
57	44.1	36.2	117	90.4	74.2	177	136.8	112.3	237	183.2	150.4	297	229.6	188.4
58	44.8	36.8	118	91.2	74.9	178	137.6	112.9	238	184.0	151.0	298	230.4	189.0
59	45.6	37.4	119	92.0	75.5	179	138.4	113.6	239	184.7	151.6	299	231.1	189.7
60	46.4	38.1	120	92.8	76.1	180	139.1	114.2	240	185.5	152.3	300	231.9	190.3
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.
NE½E.			SE½E.			SW½W.			NW½W.			or 4½ Points.		

TABLE XII.

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NE½N.			SE½S.			SW½S.			NW½N.			or 3¼ Points.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.7	0.7	61	45.2	41.0	121	89.7	81.3	181	134.1	121.6	241	178.6	161.8
2	1.5	1.3	62	45.9	41.6	122	90.4	81.9	182	134.9	122.2	242	179.3	162.5
3	2.2	2.0	63	46.7	42.3	123	91.1	82.6	183	135.6	122.9	243	180.1	163.2
4	3.0	2.7	64	47.4	43.0	124	91.9	83.3	184	136.3	123.6	244	180.8	163.9
5	3.7	3.4	65	48.2	43.7	125	92.6	83.9	185	137.1	124.2	245	181.5	164.5
6	4.4	4.0	66	48.9	44.3	126	93.4	84.6	186	137.8	124.9	246	182.3	165.2
7	5.2	4.7	67	49.6	45.0	127	94.1	85.3	187	138.6	125.6	247	183.0	165.9
8	5.9	5.4	68	50.4	45.7	128	94.8	86.0	188	139.3	126.3	248	183.8	166.5
9	6.7	6.0	69	51.1	46.3	129	95.6	86.6	189	140.0	126.9	249	184.5	167.2
10	7.4	6.7	70	51.9	47.0	130	96.3	87.3	190	140.8	127.6	250	185.2	167.9
11	8.2	7.4	71	52.6	47.7	131	97.1	88.0	191	141.5	128.3	251	186.0	168.6
12	8.9	8.1	72	53.3	48.4	132	97.8	88.6	192	142.3	128.9	252	186.7	169.2
13	9.6	8.7	73	54.1	49.0	133	98.5	89.3	193	143.0	129.6	253	187.5	169.9
14	10.4	9.4	74	54.8	49.7	134	99.3	90.0	194	143.7	130.3	254	188.2	170.6
15	11.1	10.1	75	55.6	50.4	135	100.0	90.7	195	144.5	131.0	255	188.9	171.2
16	11.9	10.7	76	56.3	51.0	136	100.8	91.3	196	145.2	131.6	256	189.7	171.9
17	12.6	11.4	77	57.1	51.7	137	101.5	92.0	197	146.0	132.3	257	190.4	172.6
18	13.3	12.1	78	57.8	52.4	138	102.3	92.7	198	146.7	133.0	258	191.2	173.3
19	14.1	12.8	79	58.5	53.1	139	103.0	93.3	199	147.4	133.6	259	191.9	173.9
20	14.8	13.4	80	59.3	53.7	140	103.7	94.0	200	148.2	134.3	260	192.6	174.6
21	15.6	14.1	81	60.0	54.4	141	104.5	94.7	201	148.9	135.0	261	193.4	175.3
22	16.3	14.8	82	60.8	55.1	142	105.2	95.4	202	149.7	135.7	262	194.1	175.9
23	17.0	15.4	83	61.5	55.7	143	106.0	96.0	203	150.4	136.3	263	194.9	176.6
24	17.8	16.1	84	62.2	56.4	144	106.7	96.7	204	151.2	137.0	264	195.6	177.3
25	18.5	16.8	85	63.0	57.1	145	107.4	97.4	205	151.9	137.7	265	196.4	178.0
26	19.3	17.5	86	63.7	57.8	146	108.2	98.0	206	152.6	138.3	266	197.1	178.6
27	20.0	18.1	87	64.5	58.4	147	108.9	98.7	207	153.4	139.0	267	197.8	179.3
28	20.7	18.8	88	65.2	59.1	148	109.7	99.4	208	154.1	139.7	268	198.6	180.0
29	21.5	19.5	89	65.9	59.8	149	110.4	100.1	209	154.9	140.4	269	199.3	180.6
30	22.2	20.1	90	66.7	60.4	150	111.1	100.7	210	155.6	141.0	270	200.1	181.3
31	23.0	20.8	91	67.4	61.1	151	111.9	101.4	211	156.3	141.7	271	200.8	182.0
32	23.7	21.5	92	68.2	61.8	152	112.6	102.1	212	157.1	142.4	272	201.5	182.7
33	24.5	22.2	93	68.9	62.5	153	113.4	102.7	213	157.8	143.0	273	202.3	183.3
34	25.2	22.8	94	69.6	63.1	154	114.1	103.4	214	158.6	143.7	274	203.0	184.0
35	25.9	23.5	95	70.4	63.8	155	114.8	104.1	215	159.3	144.4	275	203.8	184.7
36	26.7	24.2	96	71.1	64.5	156	115.6	104.8	216	160.0	145.1	276	204.5	185.4
37	27.4	24.8	97	71.9	65.1	157	116.3	105.4	217	160.8	145.7	277	205.2	186.0
38	28.2	25.5	98	72.6	65.8	158	117.1	106.1	218	161.5	146.4	278	206.0	186.7
39	28.9	26.2	99	73.4	66.5	159	117.8	106.8	219	162.3	147.1	279	206.7	187.4
40	29.6	26.9	100	74.1	67.2	160	118.6	107.4	220	163.0	147.7	280	207.5	188.0
41	30.4	27.5	101	74.8	67.8	161	119.3	108.1	221	163.8	148.4	281	208.2	188.7
42	31.1	28.2	102	75.6	68.5	162	120.0	108.8	222	164.5	149.1	282	208.9	189.4
43	31.9	28.9	103	76.3	69.2	163	120.8	109.5	223	165.2	149.8	283	209.7	190.1
44	32.6	29.5	104	77.1	69.8	164	121.5	110.1	224	166.0	150.4	284	210.4	190.7
45	33.3	30.2	105	77.8	70.5	165	122.3	110.8	225	166.7	151.1	285	211.2	191.4
46	34.1	30.9	106	78.5	71.2	166	123.0	111.5	226	167.5	151.8	286	211.9	192.1
47	34.8	31.6	107	79.3	71.9	167	123.7	112.2	227	168.2	152.4	287	212.7	192.7
48	35.6	32.2	108	80.0	72.5	168	124.5	112.8	228	168.9	153.1	288	213.4	193.4
49	36.3	32.9	109	80.8	73.2	169	125.2	113.5	229	169.7	153.8	289	214.1	194.1
50	37.0	33.6	110	81.5	73.9	170	126.0	114.2	230	170.4	154.5	290	214.9	194.8
51	37.8	34.2	111	82.2	74.5	171	126.7	114.8	231	171.2	155.1	291	215.6	195.4
52	38.5	34.9	112	83.0	75.2	172	127.4	115.5	232	171.9	155.8	292	216.4	196.1
53	39.3	35.6	113	83.7	75.9	173	128.2	116.2	233	172.6	156.5	293	217.1	196.8
54	40.0	36.3	114	84.5	76.6	174	128.9	116.9	234	173.4	157.1	294	217.8	197.4
55	40.8	36.9	115	85.2	77.2	175	129.7	117.5	235	174.1	157.8	295	218.6	198.1
56	41.5	37.6	116	86.0	77.9	176	130.4	118.2	236	174.9	158.5	296	219.3	198.8
57	42.2	38.3	117	86.7	78.6	177	131.1	118.9	237	175.6	159.2	297	220.1	199.5
58	43.0	39.0	118	87.4	79.2	178	131.9	119.5	238	176.3	159.8	298	220.8	200.1
59	43.7	39.6	119	88.2	79.9	179	132.6	120.2	239	177.1	160.5	299	221.5	200.8
60	44.5	40.3	120	88.9	80.6	180	133.4	120.9	240	177.8	161.2	300	222.3	201.5
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TRAVERSE TABLE, TO POINTS AND QUARTERS OF THE COMPASS.

NE.			SE.			SW.			NW,			or 4 Points.		
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.7	0.7	61	43.1	43.1	121	85.6	85.6	181	128.0	128.0	241	170.4	170.4
2	1.4	1.4	62	43.8	43.8	122	86.3	86.3	182	128.7	128.7	242	171.1	171.1
3	2.1	2.1	63	44.5	44.5	123	87.0	87.0	183	129.4	129.4	243	171.8	171.8
4	2.8	2.8	64	45.3	45.3	124	87.7	87.7	184	130.1	130.1	244	172.5	172.5
5	3.5	3.5	65	46.0	46.0	125	88.4	88.4	185	130.8	130.8	245	173.2	173.2
6	4.2	4.2	66	46.7	46.7	126	89.1	89.1	186	131.5	131.5	246	173.9	173.9
7	4.9	4.9	67	47.4	47.4	127	89.8	89.8	187	132.2	132.2	247	174.7	174.7
8	5.7	5.7	68	48.1	48.1	128	90.5	90.5	188	132.9	132.9	248	175.4	175.4
9	6.4	6.4	69	48.8	48.8	129	91.2	91.2	189	133.6	133.6	249	176.1	176.1
10	7.1	7.1	70	49.5	49.5	130	91.9	91.9	190	134.4	134.4	250	176.8	176.8
11	7.8	7.8	71	50.2	50.2	131	92.6	92.6	191	135.1	135.1	251	177.5	177.5
12	8.5	8.5	72	50.9	50.9	132	93.3	93.3	192	135.8	135.8	252	178.2	178.2
13	9.2	9.2	73	51.6	51.6	133	94.0	94.0	193	136.5	136.5	253	178.9	178.9
14	9.9	9.9	74	52.3	52.3	134	94.8	94.8	194	137.2	137.2	254	179.6	179.6
15	10.6	10.6	75	53.0	53.0	135	95.5	95.5	195	137.9	137.9	255	180.3	180.3
16	11.3	11.3	76	53.7	53.7	136	96.2	96.2	196	138.6	138.6	256	181.0	181.0
17	12.0	12.0	77	54.4	54.4	137	96.9	96.9	197	139.3	139.3	257	181.7	181.7
18	12.7	12.7	78	55.2	55.2	138	97.6	97.6	198	140.0	140.0	258	182.4	182.4
19	13.4	13.4	79	55.9	55.9	139	98.3	98.3	199	140.7	140.7	259	183.1	183.1
20	14.1	14.1	80	56.6	56.6	140	99.0	99.0	200	141.4	141.4	260	183.8	183.8
21	14.8	14.8	81	57.3	57.3	141	99.7	99.7	201	142.1	142.1	261	184.6	184.6
22	15.6	15.6	82	58.0	58.0	142	100.4	100.4	202	142.8	142.8	262	185.3	185.3
23	16.3	16.3	83	58.7	58.7	143	101.1	101.1	203	143.5	143.5	263	186.0	186.0
24	17.0	17.0	84	59.4	59.4	144	101.8	101.8	204	144.2	144.2	264	186.7	186.7
25	17.7	17.7	85	60.1	60.1	145	102.5	102.5	205	145.0	145.0	265	187.4	187.4
26	18.4	18.4	86	60.8	60.8	146	103.2	103.2	206	145.7	145.7	266	188.1	188.1
27	19.1	19.1	87	61.5	61.5	147	103.9	103.9	207	146.4	146.4	267	188.8	188.8
28	19.8	19.8	88	62.2	62.2	148	104.7	104.7	208	147.1	147.1	268	189.5	189.5
29	20.5	20.5	89	62.9	62.9	149	105.4	105.4	209	147.8	147.8	269	190.2	190.2
30	21.2	21.2	90	63.6	63.6	150	106.1	106.1	210	148.5	148.5	270	190.9	190.9
31	21.9	21.9	91	64.3	64.3	151	106.8	106.8	211	149.2	149.2	271	191.6	191.6
32	22.6	22.6	92	65.1	65.1	152	107.5	107.5	212	149.9	149.9	272	192.3	192.3
33	23.3	23.3	93	65.8	65.8	153	108.2	108.2	213	150.6	150.6	273	193.0	193.0
34	24.0	24.0	94	66.5	66.5	154	108.9	108.9	214	151.3	151.3	274	193.7	193.7
35	24.7	24.7	95	67.2	67.2	155	109.6	109.6	215	152.0	152.0	275	194.5	194.5
36	25.5	25.5	96	67.9	67.9	156	110.3	110.3	216	152.7	152.7	276	195.2	195.2
37	26.2	26.2	97	68.6	68.6	157	111.0	111.0	217	153.4	153.4	277	195.9	195.9
38	26.9	26.9	98	69.3	69.3	158	111.7	111.7	218	154.1	154.1	278	196.6	196.6
39	27.6	27.6	99	70.0	70.0	159	112.4	112.4	219	154.9	154.9	279	197.3	197.3
40	28.3	28.3	100	70.7	70.7	160	113.1	113.1	220	155.6	155.6	280	198.0	198.0
41	29.0	29.0	101	71.4	71.4	161	113.8	113.8	221	156.3	156.3	281	198.7	198.7
42	29.7	29.7	102	72.1	72.1	162	114.6	114.6	222	157.0	157.0	282	199.4	199.4
43	30.4	30.4	103	72.8	72.8	163	115.3	115.3	223	157.7	157.7	283	200.1	200.1
44	31.1	31.1	104	73.5	73.5	164	116.0	116.0	224	158.4	158.4	284	200.8	200.8
45	31.8	31.8	105	74.2	74.2	165	116.7	116.7	225	159.1	159.1	285	201.5	201.5
46	32.5	32.5	106	75.0	75.0	166	117.4	117.4	226	159.8	159.8	286	202.2	202.2
47	33.2	33.2	107	75.7	75.7	167	118.1	118.1	227	160.5	160.5	287	202.9	202.9
48	33.9	33.9	108	76.4	76.4	168	118.8	118.8	228	161.2	161.2	288	203.6	203.6
49	34.6	34.6	109	77.1	77.1	169	119.5	119.5	229	161.9	161.9	289	204.4	204.4
50	35.4	35.4	110	77.8	77.8	170	120.2	120.2	230	162.6	162.6	290	205.1	205.1
51	36.1	36.1	111	78.5	78.5	171	120.9	120.9	231	163.3	163.3	291	205.8	205.8
52	36.8	36.8	112	79.2	79.2	172	121.6	121.6	232	164.0	164.0	292	206.5	206.5
53	37.5	37.5	113	79.9	79.9	173	122.3	122.3	233	164.8	164.8	293	207.2	207.2
54	38.2	38.2	114	80.6	80.6	174	123.0	123.0	234	165.5	165.5	294	207.9	207.9
55	38.9	38.9	115	81.3	81.3	175	123.7	123.7	235	166.2	166.2	295	208.6	208.6
56	39.6	39.6	116	82.0	82.0	176	124.5	124.5	236	166.9	166.9	296	209.3	209.3
57	40.3	40.3	117	82.7	82.7	177	125.2	125.2	237	167.6	167.6	297	210.0	210.0
58	41.0	41.0	118	83.4	83.4	178	125.9	125.9	238	168.3	168.3	298	210.7	210.7
59	41.7	41.7	119	84.1	84.1	179	126.6	126.6	239	169.0	169.0	299	211.4	211.4
60	42.4	42.4	120	84.9	84.9	180	127.3	127.3	240	169.7	169.7	300	212.1	212.1
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

1 Degree.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.0	61	61.0	1.1	121	121.0	2.1	181	181.0	3.2	241	241.0	4.2
2	2.0	0.0	62	62.0	1.1	122	122.0	2.1	182	182.0	3.2	242	242.0	4.2
3	3.0	0.1	63	63.0	1.1	123	123.0	2.1	183	183.0	3.2	243	243.0	4.2
4	4.0	0.1	64	64.0	1.1	124	124.0	2.2	184	184.0	3.2	244	244.0	4.3
5	5.0	0.1	65	65.0	1.1	125	125.0	2.2	185	185.0	3.2	245	245.0	4.3
6	6.0	0.1	66	66.0	1.2	126	126.0	2.2	186	186.0	3.2	246	246.0	4.3
7	7.0	0.1	67	67.0	1.2	127	127.0	2.2	187	187.0	3.3	247	247.0	4.3
8	8.0	0.1	68	68.0	1.2	128	128.0	2.2	188	188.0	3.3	248	248.0	4.3
9	9.0	0.2	69	69.0	1.2	129	129.0	2.3	189	189.0	3.3	249	249.0	4.3
10	10.0	0.2	70	70.0	1.2	130	130.0	2.3	190	190.0	3.3	250	250.0	4.4
11	11.0	0.2	71	71.0	1.2	131	131.0	2.3	191	191.0	3.3	251	251.0	4.4
12	12.0	0.2	72	72.0	1.3	132	132.0	2.3	192	192.0	3.4	252	252.0	4.4
13	13.0	0.2	73	73.0	1.3	133	133.0	2.3	193	193.0	3.4	253	253.0	4.4
14	14.0	0.2	74	74.0	1.3	134	134.0	2.3	194	194.0	3.4	254	254.0	4.4
15	15.0	0.3	75	75.0	1.3	135	135.0	2.4	195	195.0	3.4	255	255.0	4.5
16	16.0	0.3	76	76.0	1.3	136	136.0	2.4	196	196.0	3.4	256	256.0	4.5
17	17.0	0.3	77	77.0	1.3	137	137.0	2.4	197	197.0	3.4	257	257.0	4.5
18	18.0	0.3	78	78.0	1.4	138	138.0	2.4	198	198.0	3.5	258	258.0	4.5
19	19.0	0.3	79	79.0	1.4	139	139.0	2.4	199	199.0	3.5	259	259.0	4.5
20	20.0	0.3	80	80.0	1.4	140	140.0	2.4	200	200.0	3.5	260	260.0	4.5
21	21.0	0.4	81	81.0	1.4	141	141.0	2.5	201	201.0	3.5	261	261.0	4.6
22	22.0	0.4	82	82.0	1.4	142	142.0	2.5	202	202.0	3.5	262	262.0	4.6
23	23.0	0.4	83	83.0	1.4	143	143.0	2.5	203	203.0	3.5	263	263.0	4.6
24	24.0	0.4	84	84.0	1.5	144	144.0	2.5	204	204.0	3.6	264	264.0	4.6
25	25.0	0.4	85	85.0	1.5	145	145.0	2.5	205	205.0	3.6	265	265.0	4.6
26	26.0	0.5	86	86.0	1.5	146	146.0	2.5	206	206.0	3.6	266	266.0	4.6
27	27.0	0.5	87	87.0	1.5	147	147.0	2.6	207	207.0	3.6	267	267.0	4.7
28	28.0	0.5	88	88.0	1.5	148	148.0	2.6	208	208.0	3.6	268	268.0	4.7
29	29.0	0.5	89	89.0	1.6	149	149.0	2.6	209	209.0	3.6	269	269.0	4.7
30	30.0	0.5	90	90.0	1.6	150	150.0	2.6	210	210.0	3.7	270	270.0	4.7
31	31.0	0.5	91	91.0	1.6	151	151.0	2.6	211	211.0	3.7	271	271.0	4.7
32	32.0	0.6	92	92.0	1.6	152	152.0	2.7	212	212.0	3.7	272	272.0	4.7
33	33.0	0.6	93	93.0	1.6	153	153.0	2.7	213	213.0	3.7	273	273.0	4.8
34	34.0	0.6	94	94.0	1.6	154	154.0	2.7	214	214.0	3.7	274	274.0	4.8
35	35.0	0.6	95	95.0	1.7	155	155.0	2.7	215	215.0	3.8	275	275.0	4.8
36	36.0	0.6	96	96.0	1.7	156	156.0	2.7	216	216.0	3.8	276	276.0	4.8
37	37.0	0.6	97	97.0	1.7	157	157.0	2.7	217	217.0	3.8	277	277.0	4.8
38	38.0	0.7	98	98.0	1.7	158	158.0	2.8	218	218.0	3.8	278	278.0	4.9
39	39.0	0.7	99	99.0	1.7	159	159.0	2.8	219	219.0	3.8	279	279.0	4.9
40	40.0	0.7	100	100.0	1.7	160	160.0	2.8	220	220.0	3.8	280	280.0	4.9
41	41.0	0.7	101	101.0	1.8	161	161.0	2.8	221	221.0	3.9	281	281.0	4.9
42	42.0	0.7	102	102.0	1.8	162	162.0	2.8	222	222.0	3.9	282	282.0	4.9
43	43.0	0.8	103	103.0	1.8	163	163.0	2.8	223	223.0	3.9	283	283.0	4.9
44	44.0	0.8	104	104.0	1.8	164	164.0	2.9	224	224.0	3.9	284	284.0	5.0
45	45.0	0.8	105	105.0	1.8	165	165.0	2.9	225	225.0	3.9	285	285.0	5.0
46	46.0	0.8	106	106.0	1.8	166	166.0	2.9	226	226.0	3.9	286	286.0	5.0
47	47.0	0.8	107	107.0	1.9	167	167.0	2.9	227	227.0	4.0	287	287.0	5.0
48	48.0	0.8	108	108.0	1.9	168	168.0	2.9	228	228.0	4.0	288	288.0	5.0
49	49.0	0.9	109	109.0	1.9	169	169.0	2.9	229	229.0	4.0	289	289.0	5.0
50	50.0	0.9	110	110.0	1.9	170	170.0	3.0	230	230.0	4.0	290	290.0	5.1
51	51.0	0.9	111	111.0	1.9	171	171.0	3.0	231	231.0	4.0	291	291.0	5.1
52	52.0	0.9	112	112.0	2.0	172	172.0	3.0	232	232.0	4.0	292	292.0	5.1
53	53.0	0.9	113	113.0	2.0	173	173.0	3.0	233	233.0	4.1	293	293.0	5.1
54	54.0	0.9	114	114.0	2.0	174	174.0	3.0	234	234.0	4.1	294	294.0	5.1
55	55.0	1.0	115	115.0	2.0	175	175.0	3.1	235	235.0	4.1	295	295.0	5.1
56	56.0	1.0	116	116.0	2.0	176	176.0	3.1	236	236.0	4.1	296	296.0	5.2
57	57.0	1.0	117	117.0	2.0	177	177.0	3.1	237	237.0	4.1	297	297.0	5.2
58	58.0	1.0	118	118.0	2.1	178	178.0	3.1	238	238.0	4.2	298	298.0	5.2
59	59.0	1.0	119	119.0	2.1	179	179.0	3.1	239	239.0	4.2	299	299.0	5.2
60	60.0	1.0	120	120.0	2.1	180	180.0	3.1	240	240.0	4.2	300	300.0	5.2
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.
TRAVERSE TABLE. TO EACH DEGREE OF THE QUADRANT.

2 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.0	61	61.0	2.1	121	120.9	4.2	181	180.9	6.3	241	240.9	8.4
2	2.0	0.1	62	62.0	2.2	122	121.9	4.3	182	181.9	6.4	242	241.9	8.4
3	3.0	0.1	63	63.0	2.2	123	122.9	4.3	183	182.9	6.4	243	242.9	8.5
4	4.0	0.1	64	64.0	2.2	124	123.9	4.3	184	183.9	6.4	244	243.9	8.5
5	5.0	0.2	65	65.0	2.3	125	124.9	4.4	185	184.9	6.5	245	244.9	8.6
6	6.0	0.2	66	66.0	2.3	126	125.9	4.4	186	185.9	6.5	246	245.9	8.6
7	7.0	0.2	67	67.0	2.3	127	126.9	4.4	187	186.9	6.5	247	246.8	8.6
8	8.0	0.3	68	68.0	2.4	128	127.9	4.5	188	187.9	6.6	248	247.8	8.7
9	9.0	0.3	69	69.0	2.4	129	128.9	4.5	189	188.9	6.6	249	248.8	8.7
10	10.0	0.3	70	70.0	2.4	130	129.9	4.5	190	189.9	6.6	250	249.8	8.7
11	11.0	0.4	71	71.0	2.5	131	130.9	4.6	191	190.9	6.7	251	250.8	8.8
12	12.0	0.4	72	72.0	2.5	132	131.9	4.6	192	191.9	6.7	252	251.8	8.8
13	13.0	0.5	73	73.0	2.5	133	132.9	4.6	193	192.9	6.7	253	252.8	8.8
14	14.0	0.5	74	74.0	2.6	134	133.9	4.7	194	193.9	6.8	254	253.8	8.9
15	15.0	0.5	75	75.0	2.6	135	134.9	4.7	195	194.9	6.8	255	254.8	8.9
16	16.0	0.6	76	76.0	2.7	136	135.9	4.7	196	195.9	6.8	256	255.8	8.9
17	17.0	0.6	77	77.0	2.7	137	136.9	4.8	197	196.9	6.9	257	256.8	9.0
18	18.0	0.6	78	78.0	2.7	138	137.9	4.8	198	197.9	6.9	258	257.8	9.0
19	19.0	0.7	79	79.0	2.8	139	138.9	4.9	199	198.9	6.9	259	258.8	9.0
20	20.0	0.7	80	80.0	2.8	140	139.9	4.9	200	199.9	7.0	260	259.8	9.1
21	21.0	0.7	81	81.0	2.8	141	140.9	4.9	201	200.9	7.0	261	260.8	9.1
22	22.0	0.8	82	82.0	2.9	142	141.9	5.0	202	201.9	7.0	262	261.8	9.1
23	23.0	0.8	83	83.0	2.9	143	142.9	5.0	203	202.9	7.1	263	262.8	9.2
24	24.0	0.8	84	84.0	2.9	144	143.9	5.0	204	203.9	7.1	264	263.8	9.2
25	25.0	0.9	85	85.0	3.0	145	144.9	5.1	205	204.9	7.2	265	264.8	9.2
26	26.0	0.9	86	86.0	3.0	146	145.9	5.1	206	205.9	7.2	266	265.8	9.3
27	27.0	0.9	87	86.9	3.0	147	146.9	5.1	207	206.9	7.2	267	266.8	9.3
28	28.0	1.0	88	87.9	3.1	148	147.9	5.2	208	207.9	7.3	268	267.8	9.4
29	29.0	1.0	89	88.9	3.1	149	148.9	5.2	209	208.9	7.3	269	268.8	9.4
30	30.0	1.0	90	89.9	3.1	150	149.9	5.2	210	209.9	7.3	270	269.8	9.4
31	31.0	1.1	91	90.9	3.2	151	150.9	5.3	211	210.9	7.4	271	270.8	9.5
32	32.0	1.1	92	91.9	3.2	152	151.9	5.3	212	211.9	7.4	272	271.8	9.5
33	33.0	1.2	93	92.9	3.2	153	152.9	5.3	213	212.9	7.4	273	272.8	9.5
34	34.0	1.2	94	93.9	3.3	154	153.9	5.4	214	213.9	7.5	274	273.8	9.6
35	35.0	1.2	95	94.9	3.3	155	154.9	5.4	215	214.9	7.5	275	274.8	9.6
36	36.0	1.3	96	95.9	3.4	156	155.9	5.4	216	215.9	7.5	276	275.8	9.6
37	37.0	1.3	97	96.9	3.4	157	156.9	5.5	217	216.9	7.6	277	276.8	9.7
38	38.0	1.3	98	97.9	3.4	158	157.9	5.5	218	217.9	7.6	278	277.8	9.7
39	39.0	1.4	99	98.9	3.5	159	158.9	5.5	219	218.9	7.6	279	278.8	9.7
40	40.0	1.4	100	99.9	3.5	160	159.9	5.6	220	219.9	7.7	280	279.8	9.8
41	41.0	1.4	101	100.9	3.5	161	160.9	5.6	221	220.9	7.7	281	280.8	9.8
42	42.0	1.5	102	101.9	3.6	162	161.9	5.7	222	221.9	7.7	282	281.8	9.8
43	43.0	1.5	103	102.9	3.6	163	162.9	5.7	223	222.9	7.8	283	282.8	9.9
44	44.0	1.5	104	103.9	3.6	164	163.9	5.7	224	223.9	7.8	284	283.8	9.9
45	45.0	1.6	105	104.9	3.7	165	164.9	5.8	225	224.9	7.9	285	284.8	9.9
46	46.0	1.6	106	105.9	3.7	166	165.9	5.8	226	225.9	7.9	286	285.8	10.0
47	47.0	1.6	107	106.9	3.7	167	166.9	5.8	227	226.9	7.9	287	286.8	10.0
48	48.0	1.7	108	107.9	3.8	168	167.9	5.9	228	227.9	8.0	288	287.8	10.1
49	49.0	1.7	109	108.9	3.8	169	168.9	5.9	229	228.9	8.0	289	288.8	10.1
50	50.0	1.7	110	109.9	3.8	170	169.9	5.9	230	229.9	8.0	290	289.8	10.1
51	51.0	1.8	111	110.9	3.9	171	170.9	6.0	231	230.9	8.1	291	290.8	10.2
52	52.0	1.8	112	111.9	3.9	172	171.9	6.0	232	231.9	8.1	292	291.8	10.2
53	53.0	1.8	113	112.9	3.9	173	172.9	6.0	233	232.9	8.1	293	292.8	10.2
54	54.0	1.9	114	113.9	4.0	174	173.9	6.1	234	233.9	8.2	294	293.8	10.3
55	55.0	1.9	115	114.9	4.0	175	174.9	6.1	235	234.9	8.2	295	294.8	10.3
56	56.0	2.0	116	115.9	4.0	176	175.9	6.1	236	235.9	8.2	296	295.8	10.3
57	57.0	2.0	117	116.9	4.1	177	176.9	6.2	237	236.9	8.3	297	296.8	10.4
58	58.0	2.0	118	117.9	4.1	178	177.9	6.2	238	237.9	8.3	298	297.8	10.4
59	59.0	2.1	119	118.9	4.2	179	178.9	6.2	239	238.9	8.3	299	298.8	10.4
60	60.0	2.1	120	119.9	4.2	180	179.9	6.3	240	239.9	8.4	300	299.8	10.5
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TABLE XIII.

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TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

3 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.1	61	60.9	3.2	121	120.8	6.3	181	180.7	9.5	241	240.7	12.6
2	2.0	0.1	62	61.9	3.2	122	121.8	6.4	182	181.7	9.5	242	241.7	12.7
3	3.0	0.2	63	62.9	3.3	123	122.8	6.4	183	182.7	9.6	243	242.7	12.7
4	4.0	0.2	64	63.9	3.3	124	123.8	6.5	184	183.7	9.6	244	243.7	12.8
5	5.0	0.3	65	64.9	3.4	125	124.8	6.5	185	184.7	9.7	245	244.7	12.8
6	6.0	0.3	66	65.9	3.5	126	125.8	6.6	186	185.7	9.7	246	245.7	12.9
7	7.0	0.4	67	66.9	3.5	127	126.8	6.6	187	186.7	9.8	247	246.7	12.9
8	8.0	0.4	68	67.9	3.6	128	127.8	6.7	188	187.7	9.8	248	247.7	13.0
9	9.0	0.5	69	68.9	3.6	129	128.8	6.8	189	188.7	9.9	249	248.7	13.0
10	10.0	0.5	70	69.9	3.7	130	129.8	6.8	190	189.7	9.9	250	249.7	13.1
11	11.0	0.6	71	70.9	3.7	131	130.8	6.9	191	190.7	10.0	251	250.7	13.1
12	12.0	0.6	72	71.9	3.8	132	131.8	6.9	192	191.7	10.0	252	251.7	13.2
13	13.0	0.7	73	72.9	3.8	133	132.8	7.0	193	192.7	10.1	253	252.7	13.2
14	14.0	0.7	74	73.9	3.9	134	133.8	7.0	194	193.7	10.2	254	253.7	13.3
15	15.0	0.8	75	74.9	3.9	135	134.8	7.1	195	194.7	10.2	255	254.7	13.3
16	16.0	0.8	76	75.9	4.0	136	135.8	7.1	196	195.7	10.3	256	255.6	13.4
17	17.0	0.9	77	76.9	4.0	137	136.8	7.2	197	196.7	10.3	257	256.6	13.5
18	18.0	0.9	78	77.9	4.1	138	137.8	7.2	198	197.7	10.4	258	257.6	13.5
19	19.0	1.0	79	78.9	4.1	139	138.8	7.3	199	198.7	10.4	259	258.6	13.6
20	20.0	1.0	80	79.9	4.2	140	139.8	7.3	200	199.7	10.5	260	259.6	13.6
21	21.0	1.1	81	80.9	4.2	141	140.8	7.4	201	200.7	10.5	261	260.6	13.7
22	22.0	1.2	82	81.9	4.3	142	141.8	7.4	202	201.7	10.6	262	261.6	13.7
23	23.0	1.2	83	82.9	4.3	143	142.8	7.5	203	202.7	10.6	263	262.6	13.8
24	24.0	1.3	84	83.9	4.4	144	143.8	7.5	204	203.7	10.7	264	263.6	13.8
25	25.0	1.3	85	84.9	4.4	145	144.8	7.6	205	204.7	10.7	265	264.6	13.9
26	26.0	1.4	86	85.9	4.5	146	145.8	7.6	206	205.7	10.8	266	265.6	13.9
27	27.0	1.4	87	86.9	4.6	147	146.8	7.7	207	206.7	10.8	267	266.6	14.0
28	28.0	1.5	88	87.9	4.6	148	147.8	7.7	208	207.7	10.9	268	267.6	14.0
29	29.0	1.5	89	88.9	4.7	149	148.8	7.8	209	208.7	10.9	269	268.6	14.1
30	30.0	1.6	90	89.9	4.7	150	149.8	7.9	210	209.7	11.0	270	269.6	14.1
31	31.0	1.6	91	90.9	4.8	151	150.8	7.9	211	210.7	11.0	271	270.6	14.2
32	32.0	1.7	92	91.9	4.8	152	151.8	8.0	212	211.7	11.1	272	271.6	14.2
33	33.0	1.7	93	92.9	4.9	153	152.8	8.0	213	212.7	11.1	273	272.6	14.3
34	34.0	1.8	94	93.9	4.9	154	153.8	8.1	214	213.7	11.2	274	273.6	14.3
35	35.0	1.8	95	94.9	5.0	155	154.8	8.1	215	214.7	11.3	275	274.6	14.4
36	36.0	1.9	96	95.9	5.0	156	155.8	8.2	216	215.7	11.3	276	275.6	14.4
37	36.9	1.9	97	96.9	5.1	157	156.8	8.2	217	216.7	11.4	277	276.6	14.5
38	37.9	2.0	98	97.9	5.1	158	157.8	8.3	218	217.7	11.4	278	277.6	14.5
39	38.9	2.0	99	98.9	5.2	159	158.8	8.3	219	218.7	11.5	279	278.6	14.6
40	39.9	2.1	100	99.9	5.2	160	159.8	8.4	220	219.7	11.5	280	279.6	14.7
41	40.9	2.1	101	100.9	5.3	161	160.8	8.4	221	220.7	11.6	281	280.6	14.7
42	41.9	2.2	102	101.9	5.3	162	161.8	8.5	222	221.7	11.6	282	281.6	14.8
43	42.9	2.3	103	102.9	5.4	163	162.8	8.5	223	222.7	11.7	283	282.6	14.8
44	43.9	2.3	104	103.9	5.4	164	163.8	8.6	224	223.7	11.7	284	283.6	14.9
45	44.9	2.4	105	104.9	5.5	165	164.8	8.6	225	224.7	11.8	285	284.6	14.9
46	45.9	2.4	106	105.9	5.5	166	165.8	8.7	226	225.7	11.8	286	285.6	15.0
47	46.9	2.5	107	106.9	5.6	167	166.8	8.7	227	226.7	11.9	287	286.6	15.0
48	47.9	2.5	108	107.9	5.7	168	167.8	8.8	228	227.7	11.9	288	287.6	15.1
49	48.9	2.6	109	108.9	5.7	169	168.8	8.8	229	228.7	12.0	289	288.6	15.1
50	49.9	2.6	110	109.8	5.8	170	169.8	8.9	230	229.7	12.0	290	289.6	15.2
51	50.9	2.7	111	110.8	5.8	171	170.8	8.9	231	230.7	12.1	291	290.6	15.2
52	51.9	2.7	112	111.8	5.9	172	171.8	9.0	232	231.7	12.1	292	291.6	15.3
53	52.9	2.8	113	112.8	5.9	173	172.8	9.1	233	232.7	12.2	293	292.6	15.3
54	53.9	2.8	114	113.8	6.0	174	173.8	9.1	234	233.7	12.2	294	293.6	15.4
55	54.9	2.9	115	114.8	6.0	175	174.8	9.2	235	234.7	12.3	295	294.6	15.4
56	55.9	2.9	116	115.8	6.1	176	175.8	9.2	236	235.7	12.4	296	295.6	15.5
57	56.9	3.0	117	116.8	6.1	177	176.8	9.3	237	236.7	12.4	297	296.6	15.5
58	57.9	3.0	118	117.8	6.2	178	177.8	9.3	238	237.7	12.5	298	297.6	15.6
59	58.9	3.1	119	118.8	6.2	179	178.8	9.4	239	238.7	12.5	299	298.6	15.6
60	59.9	3.1	120	119.8	6.3	180	179.8	9.4	240	239.7	12.6	300	299.6	15.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

4 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.1	61	60.9	4.3	121	120.7	8.4	181	180.6	12.6	241	240.4	16.8
2	2.0	0.1	62	61.8	4.3	122	121.7	8.5	182	181.6	12.7	242	241.4	16.9
3	3.0	0.2	63	62.8	4.4	123	122.7	8.6	183	182.6	12.8	243	242.4	17.0
4	4.0	0.3	64	63.8	4.5	124	123.7	8.6	184	183.6	12.8	244	243.4	17.0
5	5.0	0.3	65	64.8	4.5	125	124.7	8.7	185	184.5	12.9	245	244.4	17.1
6	6.0	0.4	66	65.8	4.6	126	125.7	8.8	186	185.5	13.0	246	245.4	17.2
7	7.0	0.5	67	66.8	4.7	127	126.7	8.9	187	186.5	13.0	247	246.4	17.3
8	8.0	0.6	68	67.8	4.7	128	127.7	8.9	188	187.5	13.1	248	247.4	17.3
9	9.0	0.6	69	68.8	4.8	129	128.7	9.0	189	188.5	13.2	249	248.4	17.4
10	10.0	0.7	70	69.8	4.9	130	129.7	9.1	190	189.5	13.3	250	249.4	17.4
11	11.0	0.8	71	70.8	5.0	131	130.7	9.1	191	190.5	13.3	251	250.4	17.5
12	12.0	0.8	72	71.8	5.0	132	131.7	9.2	192	191.5	13.4	252	251.4	17.6
13	13.0	0.9	73	72.8	5.1	133	132.7	9.3	193	192.5	13.5	253	252.4	17.6
14	14.0	1.0	74	73.8	5.2	134	133.7	9.3	194	193.5	13.5	254	253.4	17.7
15	15.0	1.0	75	74.8	5.2	135	134.7	9.4	195	194.5	13.6	255	254.4	17.8
16	16.0	1.1	76	75.8	5.3	136	135.7	9.5	196	195.5	13.7	256	255.4	17.9
17	17.0	1.2	77	76.8	5.4	137	136.7	9.6	197	196.5	13.7	257	256.4	17.9
18	18.0	1.3	78	77.8	5.4	138	137.7	9.6	198	197.5	13.8	258	257.4	18.0
19	19.0	1.3	79	78.8	5.5	139	138.7	9.7	199	198.5	13.9	259	258.4	18.1
20	20.0	1.4	80	79.8	5.6	140	139.7	9.8	200	199.5	14.0	260	259.4	18.1
21	20.9	1.5	81	80.8	5.7	141	140.7	9.8	201	200.5	14.0	261	260.4	18.2
22	21.9	1.5	82	81.8	5.7	142	141.7	9.9	202	201.5	14.1	262	261.4	18.3
23	22.9	1.6	83	82.8	5.8	143	142.7	10.0	203	202.5	14.2	263	262.4	18.3
24	23.9	1.7	84	83.8	5.9	144	143.6	10.0	204	203.5	14.2	264	263.4	18.4
25	24.9	1.7	85	84.8	5.9	145	144.6	10.1	205	204.5	14.3	265	264.4	18.5
26	25.9	1.8	86	85.8	6.0	146	145.6	10.2	206	205.5	14.4	266	265.4	18.6
27	26.9	1.9	87	86.8	6.1	147	146.6	10.3	207	206.5	14.4	267	266.3	18.6
28	27.9	2.0	88	87.8	6.1	148	147.6	10.3	208	207.5	14.5	268	267.3	18.7
29	28.9	2.0	89	88.8	6.2	149	148.6	10.4	209	208.5	14.6	269	268.3	18.8
30	29.9	2.1	90	89.8	6.3	150	149.6	10.5	210	209.5	14.6	270	269.3	18.8
31	30.9	2.2	91	90.8	6.3	151	150.6	10.5	211	210.5	14.7	271	270.3	18.9
32	31.9	2.2	92	91.8	6.4	152	151.6	10.6	212	211.5	14.8	272	271.3	19.0
33	32.9	2.3	93	92.8	6.5	153	152.6	10.7	213	212.5	14.9	273	272.3	19.0
34	33.9	2.4	94	93.8	6.6	154	153.6	10.7	214	213.5	14.9	274	273.3	19.1
35	34.9	2.4	95	94.8	6.6	155	154.6	10.8	215	214.5	15.0	275	274.3	19.2
36	35.9	2.5	96	95.8	6.7	156	155.6	10.9	216	215.5	15.1	276	275.3	19.3
37	36.9	2.6	97	96.8	6.8	157	156.6	11.0	217	216.5	15.1	277	276.3	19.3
38	37.9	2.7	98	97.8	6.8	158	157.6	11.0	218	217.5	15.2	278	277.3	19.4
39	38.9	2.7	99	98.8	6.9	159	158.6	11.1	219	218.5	15.3	279	278.3	19.5
40	39.9	2.8	100	99.8	7.0	160	159.6	11.2	220	219.5	15.3	280	279.3	19.5
41	40.9	2.9	101	100.8	7.0	161	160.6	11.2	221	220.5	15.4	281	280.3	19.6
42	41.9	2.9	102	101.8	7.1	162	161.6	11.3	222	221.5	15.5	282	281.3	19.7
43	42.9	3.0	103	102.7	7.1	163	162.6	11.4	223	222.5	15.6	283	282.3	19.7
44	43.9	3.1	104	103.7	7.3	164	163.6	11.4	224	223.5	15.6	284	283.3	19.8
45	44.9	3.1	105	104.7	7.3	165	164.6	11.5	225	224.5	15.7	285	284.3	19.9
46	45.9	3.2	106	105.7	7.4	166	165.6	11.6	226	225.4	15.8	286	285.3	20.0
47	46.9	3.3	107	106.7	7.5	167	166.6	11.6	227	226.4	15.8	287	286.3	20.0
48	47.9	3.3	108	107.7	7.5	168	167.6	11.7	228	227.4	15.9	288	287.3	20.1
49	48.9	3.4	109	108.7	7.6	169	168.6	11.8	229	228.4	16.0	289	288.3	20.2
50	49.9	3.5	110	109.7	7.7	170	169.6	11.9	230	229.4	16.0	290	289.3	20.2
51	50.9	3.6	111	110.7	7.7	171	170.6	11.9	231	230.4	16.1	291	290.3	20.3
52	51.9	3.6	112	111.7	7.8	172	171.6	12.0	232	231.4	16.2	292	291.3	20.4
53	52.9	3.7	113	112.7	7.9	173	172.6	12.1	233	232.4	16.3	293	292.3	20.4
54	53.9	3.8	114	113.7	8.0	174	173.6	12.1	234	233.4	16.3	294	293.3	20.5
55	54.9	3.8	115	114.7	8.0	175	174.6	12.2	235	234.4	16.4	295	294.3	20.6
56	55.9	3.9	116	115.7	8.1	176	175.6	12.3	236	235.4	16.5	296	295.3	20.6
57	56.9	4.0	117	116.7	8.2	177	176.6	12.3	237	236.4	16.5	297	296.3	20.7
58	57.9	4.0	118	117.7	8.2	178	177.6	12.4	238	237.4	16.6	298	297.3	20.8
59	58.9	4.1	119	118.7	8.3	179	178.6	12.5	239	238.4	16.7	299	298.3	20.9
60	59.9	4.2	120	119.7	8.4	180	179.6	12.6	240	239.4	16.7	300	299.3	20.9
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

5 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.8	5.3	121	120.5	10.5	181	180.3	15.8	241	240.1	21.0
2	2.0	0.2	62	61.8	5.4	122	121.5	10.6	182	181.3	15.9	242	241.1	21.1
3	3.0	0.3	63	62.8	5.5	123	122.5	10.7	183	182.3	15.9	243	242.1	21.2
4	4.0	0.3	64	63.8	5.6	124	123.5	10.8	184	183.3	16.0	244	243.1	21.3
5	5.0	0.4	65	64.8	5.7	125	124.5	10.9	185	184.3	16.1	245	244.1	21.4
6	6.0	0.5	66	65.7	5.8	126	125.5	11.0	186	185.3	16.2	246	245.1	21.4
7	7.0	0.6	67	66.7	5.8	127	126.5	11.1	187	186.3	16.3	247	246.1	21.5
8	8.0	0.7	68	67.7	5.9	128	127.5	11.2	188	187.3	16.4	248	247.1	21.6
9	9.0	0.8	69	68.7	6.0	129	128.5	11.2	189	188.3	16.5	249	248.1	21.7
10	10.0	0.9	70	69.7	6.1	130	129.5	11.3	190	189.3	16.6	250	249.0	21.8
11	11.0	1.0	71	70.7	6.2	131	130.5	11.4	191	190.3	16.6	251	250.0	21.9
12	12.0	1.0	72	71.7	6.3	132	131.5	11.5	192	191.3	16.7	252	251.0	22.0
13	13.0	1.1	73	72.7	6.4	133	132.5	11.6	193	192.3	16.8	253	252.0	22.1
14	13.9	1.2	74	73.7	6.4	134	133.5	11.7	194	193.3	16.9	254	253.0	22.1
15	14.9	1.3	75	74.7	6.5	135	134.5	11.8	195	194.3	17.0	255	254.0	22.2
16	15.9	1.4	76	75.7	6.6	136	135.5	11.9	196	195.3	17.1	256	255.0	22.3
17	16.9	1.5	77	76.7	6.7	137	136.5	11.9	197	196.3	17.2	257	256.0	22.4
18	17.9	1.6	78	77.7	6.8	138	137.5	12.0	198	197.2	17.3	258	257.0	22.5
19	18.9	1.7	79	78.7	6.9	139	138.5	12.1	199	198.2	17.3	259	258.0	22.6
20	19.9	1.7	80	79.7	7.0	140	139.5	12.2	200	199.2	17.4	260	259.0	22.7
21	20.9	1.8	81	80.7	7.1	141	140.5	12.3	201	200.2	17.5	261	260.0	22.7
22	21.9	1.9	82	81.7	7.1	142	141.5	12.4	202	201.2	17.6	262	261.0	22.8
23	22.9	2.0	83	82.7	7.2	143	142.5	12.5	203	202.2	17.7	263	262.0	22.9
24	23.9	2.1	84	83.7	7.3	144	143.5	12.6	204	203.2	17.8	264	263.0	23.0
25	24.9	2.2	85	84.7	7.4	145	144.4	12.6	205	204.2	17.9	265	264.0	23.1
26	25.9	2.3	86	85.7	7.5	146	145.4	12.7	206	205.2	18.0	266	265.0	23.2
27	26.9	2.4	87	86.7	7.6	147	146.4	12.8	207	206.2	18.0	267	266.0	23.3
28	27.9	2.4	88	87.7	7.7	148	147.4	12.9	208	207.2	18.1	268	267.0	23.4
29	28.9	2.5	89	88.7	7.8	149	148.4	13.0	209	208.2	18.2	269	268.0	23.4
30	29.9	2.6	90	89.7	7.8	150	149.4	13.1	210	209.2	18.3	270	269.0	23.5
31	30.9	2.7	91	90.7	7.9	151	150.4	13.2	211	210.2	18.4	271	270.0	23.6
32	31.9	2.8	92	91.6	8.0	152	151.4	13.2	212	211.2	18.5	272	271.0	23.7
33	32.9	2.9	93	92.6	8.1	153	152.4	13.3	213	212.2	18.6	273	272.0	23.8
34	33.9	3.0	94	93.6	8.2	154	153.4	13.4	214	213.2	18.7	274	273.0	23.9
35	34.9	3.1	95	94.6	8.3	155	154.4	13.5	215	214.2	18.7	275	274.0	24.0
36	35.9	3.1	96	95.6	8.4	156	155.4	13.6	216	215.2	18.8	276	274.9	24.1
37	36.9	3.2	97	96.6	8.5	157	156.4	13.7	217	216.2	18.9	277	275.9	24.1
38	37.9	3.3	98	97.6	8.5	158	157.4	13.8	218	217.2	19.0	278	276.9	24.2
39	38.9	3.4	99	98.6	8.6	159	158.4	13.9	219	218.2	19.1	279	277.9	24.3
40	39.8	3.5	100	99.6	8.7	160	159.4	13.9	220	219.2	19.2	280	278.9	24.4
41	40.8	3.6	101	100.6	8.8	161	160.4	14.0	221	220.2	19.3	281	279.9	24.5
42	41.8	3.7	102	101.6	8.9	162	161.4	14.1	222	221.2	19.3	282	280.9	24.6
43	42.8	3.7	103	102.6	9.0	163	162.4	14.2	223	222.2	19.4	283	281.9	24.7
44	43.8	3.8	104	103.6	9.1	164	163.4	14.3	224	223.1	19.5	284	282.9	24.8
45	44.8	3.9	105	104.6	9.2	165	164.4	14.4	225	224.1	19.6	285	283.9	24.8
46	45.8	4.0	106	105.6	9.2	166	165.4	14.5	226	225.1	19.7	286	284.9	24.9
47	46.8	4.1	107	106.6	9.3	167	166.4	14.6	227	226.1	19.8	287	285.9	25.0
48	47.8	4.2	108	107.6	9.4	168	167.4	14.6	228	227.1	19.9	288	286.9	25.1
49	48.8	4.3	109	108.6	9.5	169	168.4	14.7	229	228.1	20.0	289	287.9	25.2
50	49.8	4.4	110	109.6	9.6	170	169.4	14.8	230	229.1	20.0	290	288.9	25.3
51	50.8	4.4	111	110.6	9.7	171	170.3	14.9	231	230.1	20.1	291	289.9	25.4
52	51.8	4.5	112	111.6	9.8	172	171.3	15.0	232	231.1	20.2	292	290.9	25.4
53	52.8	4.6	113	112.6	9.8	173	172.3	15.1	233	232.1	20.3	293	291.9	25.5
54	53.8	4.7	114	113.6	9.9	174	173.3	15.2	234	233.1	20.4	294	292.9	25.6
55	54.8	4.8	115	114.6	10.0	175	174.3	15.3	235	234.1	20.5	295	293.9	25.7
56	55.8	4.9	116	115.6	10.1	176	175.3	15.3	236	235.1	20.6	296	294.9	25.8
57	56.8	5.0	117	116.6	10.2	177	176.3	15.4	237	236.1	20.7	297	295.9	25.9
58	57.8	5.1	118	117.6	10.3	178	177.3	15.5	238	237.1	20.7	298	296.9	26.0
59	58.8	5.1	119	118.5	10.4	179	178.3	15.6	239	238.1	20.8	299	297.9	26.1
60	59.8	5.2	120	119.5	10.5	180	179.3	15.7	240	239.1	20.9	300	298.9	26.1
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

6 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.7	6.4	121	120.3	12.6	181	180.0	18.9	241	239.7	25.2
2	2.0	0.2	62	61.7	6.5	122	121.3	12.8	182	181.0	19.0	242	240.7	25.3
3	3.0	0.3	63	62.7	6.6	123	122.3	12.9	183	182.0	19.1	243	241.7	25.4
4	4.0	0.4	64	63.6	6.7	124	123.3	13.0	184	183.0	19.2	244	242.7	25.5
5	5.0	0.5	65	64.6	6.8	125	124.3	13.1	185	184.0	19.3	245	243.7	25.6
6	6.0	0.6	66	65.6	6.9	126	125.3	13.2	186	185.0	19.4	246	244.7	25.7
7	7.0	0.7	67	66.6	7.0	127	126.3	13.3	187	186.0	19.5	247	245.6	25.8
8	8.0	0.8	68	67.6	7.1	128	127.3	13.4	188	187.0	19.7	248	246.6	25.9
9	9.0	0.9	69	68.6	7.2	129	128.3	13.5	189	188.0	19.8	249	247.6	26.0
10	9.9	1.0	70	69.6	7.3	130	129.3	13.6	190	189.0	19.9	250	248.6	26.1
11	10.9	1.1	71	70.6	7.4	131	130.3	13.7	191	190.0	20.0	251	249.6	26.2
12	11.9	1.3	72	71.6	7.5	132	131.3	13.8	192	190.9	20.1	252	250.6	26.3
13	12.9	1.4	73	72.6	7.6	133	132.3	13.9	193	191.9	20.2	253	251.6	26.4
14	13.9	1.5	74	73.6	7.7	134	133.3	14.0	194	192.9	20.3	254	252.6	26.6
15	14.9	1.6	75	74.6	7.8	135	134.3	14.1	195	193.9	20.4	255	253.6	26.7
16	15.9	1.7	76	75.6	7.9	136	135.3	14.2	196	194.9	20.5	256	254.6	26.8
17	16.9	1.8	77	76.6	8.0	137	136.2	14.3	197	195.9	20.6	257	255.6	26.9
18	17.9	1.9	78	77.6	8.2	138	137.2	14.4	198	196.9	20.7	258	256.6	27.0
19	18.9	2.0	79	78.6	8.3	139	138.2	14.5	199	197.9	20.8	259	257.6	27.1
20	19.9	2.1	80	79.6	8.4	140	139.2	14.6	200	198.9	20.9	260	258.6	27.2
21	20.9	2.2	81	80.6	8.5	141	140.2	14.7	201	199.9	21.0	261	259.6	27.3
22	21.9	2.3	82	81.6	8.6	142	141.2	14.8	202	200.9	21.1	262	260.6	27.4
23	22.9	2.4	83	82.5	8.7	143	142.2	14.9	203	201.9	21.2	263	261.6	27.5
24	23.9	2.5	84	83.5	8.8	144	143.2	15.1	204	202.9	21.3	264	262.6	27.6
25	24.9	2.6	85	84.5	8.9	145	144.2	15.2	205	203.9	21.4	265	263.5	27.7
26	25.9	2.7	86	85.5	9.0	146	145.2	15.3	206	204.9	21.5	266	264.5	27.8
27	26.9	2.8	87	86.5	9.1	147	146.2	15.4	207	205.9	21.6	267	265.5	27.9
28	27.8	2.9	88	87.5	9.2	148	147.2	15.5	208	206.9	21.7	268	266.5	28.0
29	28.8	3.0	89	88.5	9.3	149	148.2	15.6	209	207.9	21.8	269	267.5	28.1
30	29.8	3.1	90	89.5	9.4	150	149.2	15.7	210	208.8	22.0	270	268.5	28.2
31	30.8	3.2	91	90.5	9.5	151	150.2	15.8	211	209.8	22.1	271	269.5	28.3
32	31.8	3.3	92	91.5	9.6	152	151.2	15.9	212	210.8	22.2	272	270.5	28.4
33	32.8	3.4	93	92.5	9.7	153	152.2	16.0	213	211.8	22.3	273	271.5	28.5
34	33.8	3.6	94	93.5	9.8	154	153.2	16.1	214	212.8	22.4	274	272.5	28.6
35	34.8	3.7	95	94.5	9.9	155	154.2	16.2	215	213.8	22.5	275	273.5	28.7
36	35.8	3.8	96	95.5	10.0	156	155.1	16.3	216	214.8	22.6	276	274.5	28.8
37	36.8	3.9	97	96.5	10.1	157	156.1	16.4	217	215.8	22.7	277	275.5	29.0
38	37.8	4.0	98	97.5	10.2	158	157.1	16.5	218	216.8	22.8	278	276.5	29.1
39	38.8	4.1	99	98.5	10.3	159	158.1	16.6	219	217.8	22.9	279	277.5	29.2
40	39.8	4.2	100	99.5	10.5	160	159.1	16.7	220	218.8	23.0	280	278.5	29.3
41	40.8	4.3	101	100.4	10.6	161	160.1	16.8	221	219.8	23.1	281	279.5	29.4
42	41.8	4.4	102	101.4	10.7	162	161.1	16.9	222	220.8	23.2	282	280.5	29.5
43	42.8	4.5	103	102.4	10.8	163	162.1	17.0	223	221.8	23.3	283	281.4	29.6
44	43.8	4.6	104	103.4	10.9	164	163.1	17.1	224	222.8	23.4	284	282.4	29.7
45	44.8	4.7	105	104.4	11.0	165	164.1	17.2	225	223.8	23.5	285	283.4	29.8
46	45.7	4.8	106	105.4	11.1	166	165.1	17.4	226	224.8	23.6	286	284.4	29.9
47	46.7	4.9	107	106.4	11.2	167	166.1	17.5	227	225.8	23.7	287	285.4	30.0
48	47.7	5.0	108	107.4	11.3	168	167.1	17.6	228	226.8	23.8	288	286.4	30.1
49	48.7	5.1	109	108.4	11.4	169	168.1	17.7	229	227.7	23.9	289	287.4	30.2
50	49.7	5.2	110	109.4	11.5	170	169.1	17.8	230	228.7	24.0	290	288.4	30.3
51	50.7	5.3	111	110.4	11.6	171	170.1	17.9	231	229.7	24.1	291	289.4	30.4
52	51.7	5.4	112	111.4	11.7	172	171.1	18.0	232	230.7	24.3	292	290.4	30.5
53	52.7	5.5	113	112.4	11.8	173	172.1	18.1	233	231.7	24.4	293	291.4	30.6
54	53.7	5.6	114	113.4	11.9	174	173.0	18.2	234	232.7	24.5	294	292.4	30.7
55	54.7	5.7	115	114.4	12.0	175	174.0	18.3	235	233.7	24.6	295	293.4	30.8
56	55.7	5.9	116	115.4	12.1	176	175.0	18.4	236	234.7	24.7	296	294.4	30.9
57	56.7	6.0	117	116.4	12.2	177	176.0	18.5	237	235.7	24.8	297	295.4	31.0
58	57.7	6.1	118	117.4	12.3	178	177.0	18.6	238	236.7	24.9	298	296.4	31.1
59	58.7	6.2	119	118.3	12.4	179	178.0	18.7	239	237.7	25.0	299	297.4	31.3
60	59.7	6.3	120	119.3	12.5	180	179.0	18.8	240	238.7	25.1	300	298.4	31.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

84 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

101

7 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.1	61	60.5	7.4	121	120.1	14.7	181	179.7	22.1	241	239.2	29.4
2	2.0	0.2	62	61.5	7.6	122	121.1	14.9	182	180.6	22.2	242	240.2	29.5
3	3.0	0.4	63	62.5	7.7	123	122.1	15.0	183	181.6	22.3	243	241.2	29.6
4	4.0	0.5	64	63.5	7.8	124	123.1	15.1	184	182.6	22.4	244	242.2	29.7
5	5.0	0.6	65	64.5	7.9	125	124.1	15.2	185	183.6	22.5	245	243.2	29.9
6	6.0	0.7	66	65.5	8.0	126	125.1	15.4	186	184.6	22.7	246	244.2	30.0
7	6.9	0.9	67	66.5	8.2	127	126.1	15.5	187	185.6	22.8	247	245.2	30.1
8	7.9	1.0	68	67.5	8.3	128	127.0	15.6	188	186.6	22.9	248	246.2	30.2
9	8.9	1.1	69	68.5	8.4	129	128.0	15.7	189	187.6	23.0	249	247.1	30.3
10	9.9	1.2	70	69.5	8.5	130	129.0	15.8	190	188.6	23.2	250	248.1	30.5
11	10.9	1.3	71	70.5	8.7	131	130.0	16.0	191	189.6	23.3	251	249.1	30.6
12	11.9	1.5	72	71.5	8.8	132	131.0	16.1	192	190.6	23.4	252	250.1	30.7
13	12.9	1.6	73	72.5	8.9	133	132.0	16.2	193	191.6	23.5	253	251.1	30.8
14	13.9	1.7	74	73.4	9.0	134	133.0	16.3	194	192.6	23.6	254	252.1	31.0
15	14.9	1.8	75	74.4	9.1	135	134.0	16.5	195	193.5	23.8	255	253.1	31.1
16	15.9	1.9	76	75.4	9.3	136	135.0	16.6	196	194.5	23.9	256	254.1	31.2
17	16.9	2.1	77	76.4	9.4	137	136.0	16.7	197	195.5	24.0	257	255.1	31.3
18	17.9	2.2	78	77.4	9.5	138	137.0	16.8	198	196.5	24.1	258	256.1	31.4
19	18.9	2.3	79	78.4	9.6	139	138.0	16.9	199	197.5	24.3	259	257.1	31.6
20	19.9	2.4	80	79.4	9.7	140	139.0	17.1	200	198.5	24.4	260	258.1	31.7
21	20.8	2.6	81	80.4	9.9	141	139.9	17.2	201	199.5	24.5	261	259.1	31.8
22	21.8	2.7	82	81.4	10.0	142	140.9	17.3	202	200.5	24.6	262	260.0	31.9
23	22.8	2.8	83	82.4	10.1	143	141.9	17.4	203	201.5	24.7	263	261.0	32.1
24	23.8	2.9	84	83.4	10.2	144	142.9	17.5	204	202.5	24.9	264	262.0	32.2
25	24.8	3.0	85	84.4	10.4	145	143.9	17.7	205	203.5	25.0	265	263.0	32.3
26	25.8	3.2	86	85.4	10.5	146	144.9	17.8	206	204.5	25.1	266	264.0	32.4
27	26.8	3.3	87	86.4	10.6	147	145.9	17.9	207	205.5	25.2	267	265.0	32.5
28	27.8	3.4	88	87.3	10.7	148	146.9	18.0	208	206.4	25.3	268	266.0	32.7
29	28.8	3.5	89	88.3	10.8	149	147.9	18.2	209	207.4	25.5	269	267.0	32.8
30	29.8	3.7	90	89.3	11.0	150	148.9	18.3	210	208.4	25.6	270	268.0	32.9
31	30.8	3.8	91	90.3	11.1	151	149.9	18.4	211	209.4	25.7	271	269.0	33.0
32	31.8	3.9	92	91.3	11.2	152	150.9	18.5	212	210.4	25.8	272	270.0	33.1
33	32.8	4.0	93	92.3	11.3	153	151.9	18.6	213	211.4	26.0	273	271.0	33.3
34	33.7	4.1	94	93.3	11.5	154	152.9	18.8	214	212.4	26.1	274	272.0	33.4
35	34.7	4.3	95	94.3	11.6	155	153.8	18.9	215	213.4	26.2	275	273.0	33.5
36	35.7	4.4	96	95.3	11.7	156	154.8	19.0	216	214.4	26.3	276	273.9	33.6
37	36.7	4.5	97	96.3	11.8	157	155.8	19.1	217	215.4	26.4	277	274.9	33.8
38	37.7	4.6	98	97.3	11.9	158	156.8	19.3	218	216.4	26.6	278	275.9	33.9
39	38.7	4.8	99	98.3	12.1	159	157.8	19.4	219	217.4	26.7	279	276.9	34.0
40	39.7	4.9	100	99.3	12.2	160	158.8	19.5	220	218.4	26.8	280	277.9	34.1
41	40.7	5.0	101	100.2	12.3	161	159.8	19.6	221	219.4	26.9	281	278.9	34.2
42	41.7	5.1	102	101.2	12.4	162	160.8	19.7	222	220.3	27.1	282	279.9	34.4
43	42.7	5.2	103	102.2	12.6	163	161.8	19.9	223	221.3	27.2	283	280.9	34.5
44	43.7	5.4	104	103.2	12.7	164	162.8	20.0	224	222.3	27.3	284	281.9	34.6
45	44.7	5.5	105	104.3	12.8	165	163.8	20.1	225	223.3	27.4	285	282.9	34.7
46	45.7	5.6	106	105.2	12.9	166	164.8	20.2	226	224.3	27.5	286	283.9	34.9
47	46.6	5.7	107	106.2	13.0	167	165.8	20.4	227	225.3	27.7	287	284.9	35.0
48	47.6	5.8	108	107.2	13.2	168	166.7	20.5	228	226.3	27.8	288	285.9	35.1
49	48.6	6.0	109	108.2	13.3	169	167.7	20.6	229	227.3	27.9	289	286.8	35.2
50	49.6	6.1	110	109.2	13.4	170	168.7	20.7	230	228.3	28.0	290	287.8	35.3
51	50.6	6.2	111	110.2	13.5	171	169.7	20.8	231	229.3	28.2	291	288.8	35.5
52	51.6	6.3	112	111.2	13.6	172	170.7	21.0	232	230.3	28.3	292	289.8	35.6
53	52.6	6.5	113	112.2	13.8	173	171.7	21.4	233	231.3	28.4	293	290.8	35.7
54	53.6	6.6	114	113.2	13.9	174	172.7	21.2	234	232.3	28.5	294	291.8	35.8
55	54.6	6.7	115	114.1	14.0	175	173.7	21.3	235	233.2	28.6	295	292.8	36.0
56	55.6	6.8	116	115.1	14.1	176	174.7	21.4	236	234.2	28.8	296	293.8	36.1
57	56.6	6.9	117	116.1	14.3	177	175.7	21.6	237	235.2	28.9	297	294.8	36.2
58	57.6	7.1	118	117.1	14.4	178	176.7	21.7	238	236.2	29.0	298	295.8	36.3
59	58.6	7.2	119	118.1	14.5	179	177.7	21.8	239	237.2	29.1	299	296.8	36.4
60	59.6	7.3	120	119.1	14.6	180	178.7	21.9	240	238.2	29.2	300	297.8	36.6
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

83 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

8 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.4	8.5	121	119.8	16.8	181	179.2	25.2	241	238.7	33.5
2	2.0	0.3	62	61.4	8.6	122	120.8	17.0	182	180.2	25.3	242	239.6	33.7
3	3.0	0.4	63	62.4	8.8	123	121.8	17.1	183	181.2	25.5	243	240.6	33.8
4	4.0	0.6	64	63.4	8.9	124	122.8	17.3	184	182.2	25.6	244	241.6	34.0
5	5.0	0.7	65	64.4	9.0	125	123.8	17.4	185	183.2	25.7	245	242.6	34.1
6	5.9	0.8	66	65.4	9.2	126	124.8	17.5	186	184.2	25.9	246	243.6	34.2
7	6.9	1.0	67	66.3	9.3	127	125.8	17.7	187	185.2	26.0	247	244.6	34.4
8	7.9	1.1	68	67.3	9.5	128	126.8	17.8	188	186.2	26.2	248	245.6	34.5
9	8.9	1.3	69	68.3	9.6	129	127.7	18.0	189	187.2	26.3	249	246.6	34.7
10	9.9	1.4	70	69.3	9.7	130	128.7	18.1	190	188.2	26.4	250	247.6	34.8
11	10.9	1.5	71	70.3	9.9	131	129.7	18.2	191	189.1	26.6	251	248.6	34.9
12	11.9	1.7	72	71.3	10.0	132	130.7	18.4	192	190.1	26.7	252	249.5	35.1
13	12.9	1.8	73	72.3	10.2	133	131.7	18.5	193	191.1	26.9	253	250.5	35.2
14	13.9	1.9	74	73.3	10.3	134	132.7	18.6	194	192.1	27.0	254	251.5	35.3
15	14.9	2.1	75	74.3	10.4	135	133.7	18.8	195	193.1	27.1	255	252.5	35.5
16	15.8	2.2	76	75.3	10.6	136	134.7	18.9	196	194.1	27.3	256	253.5	35.6
17	16.8	2.4	77	76.3	10.7	137	135.7	19.1	197	195.1	27.4	257	254.5	35.8
18	17.8	2.5	78	77.2	10.9	138	136.7	19.2	198	196.1	27.6	258	255.5	35.9
19	18.8	2.6	79	78.2	11.0	139	137.7	19.3	199	197.1	27.7	259	256.5	36.0
20	19.8	2.8	80	79.2	11.1	140	138.6	19.5	200	198.0	27.8	260	257.5	36.2
21	20.8	2.9	81	80.2	11.3	141	139.6	19.6	201	199.0	28.0	261	258.5	36.3
22	21.8	3.1	82	81.2	11.4	142	140.6	19.8	202	200.0	28.1	262	259.5	36.5
23	22.8	3.2	83	82.2	11.6	143	141.6	19.9	203	201.0	28.3	263	260.4	36.6
24	23.8	3.3	84	83.2	11.7	144	142.6	20.0	204	202.0	28.4	264	261.4	36.7
25	24.8	3.5	85	84.2	11.8	145	143.6	20.2	205	203.0	28.5	265	262.4	36.9
26	25.7	3.6	86	85.2	12.0	146	144.6	20.3	206	204.0	28.7	266	263.4	37.0
27	26.7	3.8	87	86.2	12.1	147	145.6	20.5	207	205.0	28.8	267	264.4	37.2
28	27.7	3.9	88	87.1	12.2	148	146.6	20.6	208	206.0	28.9	268	265.4	37.3
29	28.7	4.0	89	88.1	12.4	149	147.5	20.7	209	207.0	29.1	269	266.4	37.4
30	29.7	4.2	90	89.1	12.5	150	148.5	20.9	210	208.0	29.2	270	267.4	37.6
31	30.7	4.3	91	90.1	12.7	151	149.5	21.0	211	208.9	29.4	271	268.4	37.7
32	31.7	4.5	92	91.1	12.8	152	150.5	21.2	212	209.9	29.5	272	269.4	37.9
33	32.7	4.6	93	92.1	12.9	153	151.5	21.3	213	210.9	29.6	273	270.3	38.0
34	33.7	4.7	94	93.1	13.1	154	152.5	21.4	214	211.9	29.8	274	271.3	38.1
35	34.7	4.9	95	94.1	13.2	155	153.5	21.6	215	212.9	29.9	275	272.3	38.3
36	35.6	5.0	96	95.1	13.4	156	154.5	21.7	216	213.9	30.1	276	273.3	38.4
37	36.6	5.1	97	96.1	13.5	157	155.5	21.9	217	214.9	30.2	277	274.3	38.6
38	37.6	5.3	98	97.0	13.6	158	156.5	22.0	218	215.9	30.3	278	275.3	38.7
39	38.6	5.4	99	98.0	13.8	159	157.5	22.1	219	216.9	30.5	279	276.3	38.8
40	39.6	5.6	100	99.0	13.9	160	158.4	22.3	220	217.9	30.6	280	277.3	39.0
41	40.6	5.7	101	100.0	14.1	161	159.4	22.4	221	218.8	30.8	281	278.3	39.1
42	41.6	5.8	102	101.0	14.2	162	160.4	22.5	222	219.8	30.9	282	279.3	39.2
43	42.6	6.0	103	102.0	14.3	163	161.4	22.7	223	220.8	31.0	283	280.2	39.4
44	43.6	6.1	104	103.0	14.5	164	162.4	22.8	224	221.8	31.2	284	281.2	39.5
45	44.6	6.3	105	104.0	14.6	165	163.4	23.0	225	222.8	31.3	285	282.2	39.7
46	45.6	6.4	106	105.0	14.8	166	164.4	23.1	226	223.8	31.5	286	283.2	39.8
47	46.5	6.5	107	106.0	14.9	167	165.4	23.2	227	224.8	31.6	287	284.2	39.9
48	47.5	6.7	108	106.9	15.0	168	166.4	23.4	228	225.8	31.7	288	285.2	40.1
49	48.5	6.8	109	107.9	15.2	169	167.4	23.5	229	226.8	31.9	289	286.2	40.2
50	49.5	7.0	110	108.9	15.3	170	168.3	23.7	230	227.8	32.0	290	287.2	40.4
51	50.5	7.1	111	109.9	15.4	171	169.3	23.8	231	228.8	32.1	291	288.2	40.5
52	51.5	7.2	112	110.9	15.6	172	170.3	23.9	232	229.7	32.3	292	289.2	40.6
53	52.5	7.4	113	111.9	15.7	173	171.3	24.1	233	230.7	32.4	293	290.1	40.8
54	53.5	7.5	114	112.9	15.9	174	172.3	24.2	234	231.7	32.6	294	291.1	40.9
55	54.5	7.7	115	113.9	16.0	175	173.3	24.4	235	232.7	32.7	295	292.1	41.1
56	55.5	7.8	116	114.9	16.1	176	174.3	24.5	236	233.7	32.8	296	293.1	41.2
57	56.4	7.9	117	115.9	16.3	177	175.3	24.6	237	234.7	33.0	297	294.1	41.3
58	57.4	8.1	118	116.9	16.4	178	176.3	24.8	238	235.7	33.1	298	295.1	41.5
59	58.4	8.2	119	117.8	16.6	179	177.3	24.9	239	236.7	33.3	299	296.1	41.6
60	59.4	8.4	120	118.8	16.7	180	178.2	25.1	240	237.7	33.4	300	297.1	41.8
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

82 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

103

9 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	60.2	9.5	121	119.5	18.9	181	178.8	28.3	241	238.0	37.7
2	2.0	0.3	62	61.2	9.7	122	120.5	19.1	182	179.8	28.5	242	239.0	37.9
3	3.0	0.5	63	62.2	9.9	123	121.5	19.2	183	180.7	28.6	243	240.0	38.0
4	4.0	0.6	64	63.2	10.0	124	122.5	19.4	184	181.7	28.8	244	241.0	38.2
5	4.9	0.8	65	64.2	10.2	125	123.5	19.6	185	182.7	28.9	245	242.0	38.3
6	5.9	0.9	66	65.2	10.3	126	124.4	19.7	186	183.7	29.1	246	243.0	38.5
7	6.9	1.1	67	66.2	10.5	127	125.4	19.9	187	184.7	29.3	247	244.0	38.6
8	7.9	1.3	68	67.2	10.6	128	126.4	20.0	188	185.7	29.4	248	244.9	38.8
9	8.9	1.4	69	68.2	10.8	129	127.4	20.2	189	186.7	29.6	249	245.9	39.0
10	9.9	1.6	70	69.1	11.0	130	128.4	20.3	190	187.7	29.7	250	246.9	39.1
11	10.9	1.7	71	70.1	11.1	131	129.4	20.5	191	188.6	29.9	251	247.9	39.3
12	11.9	1.9	72	71.1	11.3	132	130.4	20.6	192	189.6	30.0	252	248.9	39.4
13	12.8	2.0	73	72.1	11.4	133	131.4	20.8	193	190.6	30.2	253	249.9	39.6
14	13.8	2.2	74	73.1	11.6	134	132.4	21.0	194	191.6	30.3	254	250.9	39.7
15	14.8	2.3	75	74.1	11.7	135	133.3	21.1	195	192.6	30.5	255	251.9	39.9
16	15.8	2.5	76	75.1	11.9	136	134.3	21.3	196	193.6	30.7	256	252.8	40.0
17	16.8	2.7	77	76.1	12.0	137	135.3	21.4	197	194.6	30.8	257	253.8	40.2
18	17.8	2.8	78	77.0	12.2	138	136.3	21.6	198	195.6	31.0	258	254.8	40.4
19	18.8	3.0	79	78.0	12.4	139	137.3	21.7	199	196.5	31.1	259	255.8	40.5
20	19.8	3.1	80	79.0	12.5	140	138.3	21.9	200	197.5	31.3	260	256.8	40.7
21	20.7	3.3	81	80.0	12.7	141	139.3	22.1	201	198.5	31.4	261	257.8	40.8
22	21.7	3.4	82	81.0	12.8	142	140.3	22.2	202	199.5	31.6	262	258.8	41.0
23	22.7	3.6	83	82.0	13.0	143	141.2	22.4	203	200.5	31.8	263	259.8	41.1
24	23.7	3.8	84	83.0	13.1	144	142.2	22.5	204	201.5	31.9	264	260.7	41.3
25	24.7	3.9	85	84.0	13.3	145	143.2	22.7	205	202.5	32.1	265	261.7	41.5
26	25.7	4.1	86	84.9	13.5	146	144.2	22.8	206	203.5	32.2	266	262.7	41.6
27	26.7	4.2	87	85.9	13.6	147	145.2	23.0	207	204.5	32.4	267	263.7	41.8
28	27.7	4.4	88	86.9	13.8	148	146.2	23.2	208	205.4	32.5	268	264.7	41.9
29	28.6	4.5	89	87.9	13.9	149	147.2	23.3	209	206.4	32.7	269	265.7	42.1
30	29.6	4.7	90	88.9	14.1	150	148.2	23.5	210	207.4	32.9	270	266.7	42.2
31	30.6	4.8	91	89.9	14.2	151	149.1	23.6	211	208.4	33.0	271	267.7	42.4
32	31.6	5.0	92	90.9	14.4	152	150.1	23.8	212	209.4	33.2	272	268.7	42.6
33	32.6	5.2	93	91.9	14.5	153	151.1	23.9	213	210.4	33.3	273	269.6	42.7
34	33.6	5.3	94	92.8	14.7	154	152.1	24.1	214	211.4	33.5	274	270.6	42.9
35	34.6	5.5	95	93.8	14.9	155	153.1	24.2	215	212.4	33.6	275	271.6	43.0
36	35.6	5.6	96	94.8	15.0	156	154.1	24.4	216	213.3	33.8	276	272.6	43.2
37	36.5	5.8	97	95.8	15.2	157	155.1	24.6	217	214.3	33.9	277	273.6	43.3
38	37.5	5.9	98	96.8	15.3	158	156.1	24.7	218	215.3	34.1	278	274.6	43.5
39	38.5	6.1	99	97.8	15.5	159	157.0	24.9	219	216.3	34.3	279	275.6	43.6
40	39.5	6.3	100	98.8	15.6	160	158.0	25.0	220	217.3	34.4	280	276.6	43.8
41	40.5	6.4	101	99.8	15.8	161	159.0	25.2	221	218.3	34.6	281	277.5	44.0
42	41.5	6.6	102	100.7	16.0	162	160.0	25.3	222	219.3	34.7	282	278.5	44.1
43	42.5	6.7	103	101.7	16.1	163	161.0	25.5	223	220.3	34.9	283	279.5	44.3
44	43.5	6.9	104	102.7	16.3	164	162.0	25.7	224	221.2	35.0	284	280.5	44.4
45	44.4	7.0	105	103.7	16.4	165	163.0	25.8	225	222.2	35.2	285	281.5	44.6
46	45.4	7.2	106	104.7	16.6	166	164.0	26.0	226	223.2	35.4	286	282.5	44.7
47	46.4	7.4	107	105.7	16.7	167	164.9	26.1	227	224.2	35.5	287	283.5	44.9
48	47.4	7.5	108	106.7	16.9	168	165.9	26.3	228	225.2	35.7	288	284.5	45.1
49	48.4	7.7	109	107.7	17.1	169	166.9	26.4	229	226.2	35.8	289	285.4	45.2
50	49.4	7.8	110	108.6	17.2	170	167.9	26.6	230	227.2	36.0	290	286.4	45.4
51	50.4	8.0	111	109.6	17.4	171	168.9	26.8	231	228.2	36.1	291	287.4	45.5
52	51.4	8.1	112	110.6	17.5	172	169.9	26.9	232	229.1	36.3	292	288.4	45.7
53	52.3	8.3	113	111.6	17.7	173	170.9	27.1	233	230.1	36.4	293	289.4	45.8
54	53.3	8.4	114	112.6	17.8	174	171.9	27.2	234	231.1	36.6	294	290.4	46.0
55	54.3	8.6	115	113.6	18.0	175	172.8	27.4	235	232.1	36.8	295	291.4	46.1
56	55.3	8.8	116	114.6	18.1	176	173.8	27.5	236	233.1	36.9	296	292.4	46.3
57	56.3	8.9	117	115.6	18.3	177	174.8	27.7	237	234.1	37.1	297	293.3	46.5
58	57.3	9.1	118	116.5	18.5	178	175.8	27.8	238	235.1	37.2	298	294.3	46.6
59	58.3	9.2	119	117.5	18.6	179	176.8	28.0	239	236.1	37.4	299	295.3	46.8
60	59.3	9.4	120	118.5	18.8	180	177.8	28.2	240	237.0	37.5	300	296.3	46.9
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

81 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

10 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	60.1	10.6	121	119.2	21.0	181	178.3	31.4	241	237.3	41.8
2	2.0	0.3	62	61.1	10.8	122	120.1	21.2	182	179.2	31.6	242	238.3	42.0
3	3.0	0.5	63	62.0	10.9	123	121.1	21.4	183	180.2	31.8	243	239.3	42.2
4	3.9	0.7	64	63.0	11.1	124	122.1	21.5	184	181.2	32.0	244	240.3	42.4
5	4.9	0.9	65	64.0	11.3	125	123.1	21.7	185	182.2	32.1	245	241.3	42.5
6	5.9	1.0	66	65.0	11.5	126	124.1	21.9	186	183.2	32.3	246	242.3	42.7
7	6.9	1.2	67	66.0	11.6	127	125.1	22.1	187	184.2	32.5	247	243.2	42.9
8	7.9	1.4	68	67.0	11.8	128	126.1	22.2	188	185.1	32.6	248	244.2	43.1
9	8.9	1.6	69	68.0	12.0	129	127.0	22.4	189	186.1	32.8	249	245.2	43.2
10	9.8	1.7	70	68.9	12.2	130	128.0	22.6	190	187.1	33.0	250	246.2	43.4
11	10.8	1.9	71	69.9	12.3	131	129.0	22.7	191	188.1	33.2	251	247.2	43.6
12	11.8	2.1	72	70.9	12.5	132	130.0	22.9	192	189.1	33.3	252	248.2	43.8
13	12.8	2.3	73	71.9	12.7	133	131.0	23.1	193	190.1	33.5	253	249.2	43.9
14	13.8	2.4	74	72.9	12.8	134	132.0	23.3	194	191.1	33.7	254	250.1	44.1
15	14.8	2.6	75	73.9	13.0	135	132.9	23.4	195	192.0	33.9	255	251.1	44.3
16	15.8	2.8	76	74.8	13.2	136	133.9	23.6	196	193.0	34.0	256	252.1	44.5
17	16.7	3.0	77	75.8	13.4	137	134.9	23.8	197	194.0	34.2	257	253.1	44.6
18	17.7	3.1	78	76.8	13.5	138	135.9	24.0	198	195.0	34.4	258	254.1	44.8
19	18.7	3.3	79	77.8	13.7	139	136.9	24.1	199	196.0	34.6	259	255.1	45.0
20	19.7	3.5	80	78.8	13.9	140	137.9	24.3	200	197.0	34.7	260	256.1	45.1
21	20.7	3.6	81	79.8	14.1	141	138.9	24.5	201	197.9	34.9	261	257.0	45.3
22	21.7	3.8	82	80.8	14.2	142	139.8	24.7	202	198.9	35.1	262	258.0	45.5
23	22.7	4.0	83	81.7	14.4	143	140.8	24.8	203	199.9	35.3	263	259.0	45.7
24	23.6	4.2	84	82.7	14.6	144	141.8	25.0	204	200.9	35.4	264	260.0	45.8
25	24.6	4.3	85	83.7	14.8	145	142.8	25.2	205	201.9	35.6	265	261.0	46.0
26	25.6	4.5	86	84.7	14.9	146	143.8	25.4	206	202.9	35.8	266	262.0	46.2
27	26.6	4.7	87	85.7	15.1	147	144.8	25.5	207	203.9	35.9	267	262.9	46.4
28	27.6	4.9	88	86.7	15.3	148	145.8	25.7	208	204.8	36.1	268	263.9	46.5
29	28.6	5.0	89	87.6	15.5	149	146.7	25.9	209	205.8	36.3	269	264.9	46.7
30	29.5	5.2	90	88.6	15.6	150	147.7	26.0	210	206.8	36.5	270	265.9	46.9
31	30.5	5.4	91	89.6	15.8	151	148.7	26.2	211	207.8	36.6	271	266.9	47.1
32	31.5	5.6	92	90.6	16.0	152	149.7	26.4	212	208.8	36.8	272	267.9	47.3
33	32.5	5.7	93	91.6	16.1	153	150.7	26.6	213	209.8	37.0	273	268.9	47.4
34	33.5	5.9	94	92.6	16.3	154	151.7	26.7	214	210.7	37.2	274	269.8	47.6
35	34.5	6.1	95	93.6	16.5	155	152.6	26.9	215	211.7	37.3	275	270.8	47.8
36	35.5	6.3	96	94.6	16.7	156	153.6	27.1	216	212.7	37.5	276	271.8	47.9
37	36.4	6.4	97	95.5	16.8	157	154.6	27.3	217	213.7	37.7	277	272.8	48.1
38	37.4	6.6	98	96.5	17.0	158	155.6	27.4	218	214.7	37.9	278	273.8	48.3
39	38.4	6.8	99	97.5	17.2	159	156.6	27.6	219	215.7	38.0	279	274.8	48.4
40	39.4	6.9	100	98.5	17.4	160	157.6	27.8	220	216.7	38.2	280	275.7	48.6
41	40.4	7.1	101	99.5	17.5	161	158.6	28.0	221	217.6	38.4	281	276.7	48.8
42	41.4	7.3	102	100.5	17.7	162	159.5	28.1	222	218.6	38.5	282	277.7	49.0
43	42.3	7.5	103	101.4	17.9	163	160.5	28.3	223	219.6	38.7	283	278.7	49.1
44	43.3	7.6	104	102.4	18.1	164	161.5	28.5	224	220.6	38.9	284	279.7	49.3
45	44.3	7.8	105	103.4	18.2	165	162.5	28.7	225	221.6	39.1	285	280.7	49.5
46	45.3	8.0	106	104.4	18.4	166	163.5	28.8	226	222.6	39.2	286	281.7	49.7
47	46.3	8.2	107	105.4	18.6	167	164.5	29.0	227	223.6	39.4	287	282.6	49.8
48	47.3	8.3	108	106.4	18.8	168	165.5	29.2	228	224.5	39.6	288	283.6	50.0
49	48.3	8.5	109	107.3	18.9	169	166.4	29.3	229	225.5	39.8	289	284.6	50.2
50	49.2	8.7	110	108.3	19.1	170	167.4	29.5	230	226.5	39.9	290	285.6	50.4
51	50.2	8.9	111	109.3	19.3	171	168.4	29.7	231	227.5	40.1	291	286.6	50.5
52	51.2	9.0	112	110.3	19.4	172	169.4	29.9	232	228.5	40.3	292	287.6	50.7
53	52.2	9.2	113	111.3	19.6	173	170.4	30.0	233	229.5	40.5	293	288.5	50.9
54	53.2	9.4	114	112.3	19.8	174	171.4	30.2	234	230.4	40.6	294	289.5	51.1
55	54.2	9.6	115	113.3	20.0	175	172.3	30.4	235	231.4	40.8	295	290.5	51.2
56	55.1	9.7	116	114.2	20.1	176	173.3	30.6	236	232.4	41.0	296	291.5	51.4
57	56.1	9.9	117	115.2	20.3	177	174.3	30.7	237	233.4	41.2	297	292.5	51.6
58	57.1	10.1	118	116.2	20.5	178	175.3	30.9	238	234.4	41.3	298	293.5	51.7
59	58.1	10.2	119	117.2	20.7	179	176.3	31.1	239	235.4	41.5	299	294.5	51.9
60	59.1	10.4	120	118.2	20.8	180	177.3	31.3	240	236.4	41.7	300	295.4	52.1
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

80 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

105

11 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	59.9	11.6	121	118.8	23.1	181	177.7	34.5	241	236.6	46.0
2	2.0	0.4	62	60.9	11.8	122	119.8	23.3	182	178.7	34.7	242	237.6	46.2
3	2.9	0.6	63	61.8	12.0	123	120.7	23.5	183	179.6	34.9	243	238.5	46.4
4	3.9	0.8	64	62.8	12.2	124	121.7	23.7	184	180.6	35.1	244	239.5	46.6
5	4.9	1.0	65	63.8	12.4	125	122.7	23.9	185	181.6	35.3	245	240.5	46.7
6	5.9	1.1	66	64.8	12.6	126	123.7	24.0	186	182.6	35.5	246	241.5	46.9
7	6.9	1.3	67	65.8	12.8	127	124.7	24.2	187	183.6	35.7	247	242.5	47.1
8	7.9	1.5	68	66.8	13.0	128	125.6	24.4	188	184.5	35.9	248	243.4	47.3
9	8.8	1.7	69	67.7	13.2	129	126.6	24.6	189	185.5	36.1	249	244.4	47.5
10	9.8	1.9	70	68.7	13.4	130	127.6	24.8	190	186.5	36.3	250	245.4	47.7
11	10.8	2.1	71	69.7	13.5	131	128.6	25.0	191	187.5	36.4	251	246.4	47.9
12	11.8	2.3	72	70.7	13.7	132	129.6	25.2	192	188.5	36.6	252	247.4	48.1
13	12.8	2.5	73	71.7	13.9	133	130.6	25.4	193	189.5	36.8	253	248.4	48.3
14	13.7	2.7	74	72.6	14.1	134	131.5	25.6	194	190.4	37.0	254	249.3	48.5
15	14.7	2.9	75	73.6	14.3	135	132.5	25.8	195	191.4	37.2	255	250.3	48.7
16	15.7	3.1	76	74.6	14.5	136	133.5	26.0	196	192.4	37.4	256	251.3	48.8
17	16.7	3.2	77	75.6	14.7	137	134.5	26.1	197	193.4	37.6	257	252.3	49.0
18	17.7	3.4	78	76.6	14.9	138	135.5	26.3	198	194.4	37.8	258	253.3	49.2
19	18.7	3.6	79	77.5	15.1	139	136.4	26.5	199	195.3	38.0	259	254.2	49.4
20	19.6	3.8	80	78.5	15.3	140	137.4	26.7	200	196.3	38.2	260	255.2	49.6
21	20.6	4.0	81	79.5	15.5	141	138.4	26.9	201	197.3	38.4	261	256.2	49.8
22	21.6	4.2	82	80.5	15.6	142	139.4	27.1	202	198.3	38.5	262	257.2	50.0
23	22.6	4.4	83	81.5	15.8	143	140.4	27.3	203	199.3	38.7	263	258.2	50.2
24	23.6	4.6	84	82.5	16.0	144	141.4	27.5	204	200.3	38.9	264	259.1	50.4
25	24.5	4.8	85	83.4	16.2	145	142.3	27.7	205	201.2	39.1	265	260.1	50.6
26	25.5	5.0	86	84.4	16.4	146	143.3	27.9	206	202.2	39.3	266	261.1	50.8
27	26.5	5.2	87	85.4	16.6	147	144.3	28.0	207	203.2	39.5	267	262.1	50.9
28	27.5	5.3	88	86.4	16.8	148	145.3	28.2	208	204.2	39.7	268	263.1	51.1
29	28.5	5.5	89	87.4	17.0	149	146.3	28.4	209	205.2	39.9	269	264.1	51.3
30	29.4	5.7	90	88.3	17.2	150	147.2	28.6	210	206.1	40.1	270	265.0	51.5
31	30.4	5.9	91	89.3	17.4	151	148.2	28.8	211	207.1	40.3	271	266.0	51.7
32	31.4	6.1	92	90.3	17.6	152	149.2	29.0	212	208.1	40.5	272	267.0	51.9
33	32.4	6.3	93	91.3	17.7	153	150.2	29.2	213	209.1	40.6	273	268.0	52.1
34	33.4	6.5	94	92.3	17.9	154	151.2	29.4	214	210.1	40.8	274	269.0	52.3
35	34.4	6.7	95	93.3	18.1	155	152.2	29.6	215	211.0	41.0	275	269.9	52.5
36	35.3	6.9	96	94.2	18.3	156	153.1	29.8	216	212.0	41.2	276	270.9	52.7
37	36.3	7.1	97	95.2	18.5	157	154.1	30.0	217	213.0	41.4	277	271.9	52.9
38	37.3	7.3	98	96.2	18.7	158	155.1	30.1	218	214.0	41.6	278	272.9	53.0
39	38.3	7.4	99	97.2	18.9	159	156.1	30.3	219	215.0	41.8	279	273.9	53.2
40	39.3	7.6	100	98.2	19.1	160	157.1	30.5	220	216.0	42.0	280	274.9	53.4
41	40.2	7.8	101	99.1	19.3	161	158.0	30.7	221	216.9	42.2	281	275.8	53.6
42	41.2	8.0	102	100.1	19.5	162	159.0	30.9	222	217.9	42.4	282	276.8	53.8
43	42.2	8.2	103	101.1	19.7	163	160.0	31.1	223	218.9	42.6	283	277.8	54.0
44	43.2	8.4	104	102.1	19.8	164	161.0	31.3	224	219.9	42.7	284	278.8	54.2
45	44.2	8.6	105	103.1	20.0	165	162.0	31.5	225	220.9	42.9	285	279.8	54.4
46	45.2	8.8	106	104.1	20.2	166	163.0	31.7	226	221.8	43.1	286	280.7	54.6
47	46.1	9.0	107	105.0	20.4	167	163.9	31.9	227	222.8	43.3	287	281.7	54.8
48	47.1	9.2	108	106.0	20.6	168	164.9	32.1	228	223.8	43.5	288	282.7	55.0
49	48.1	9.3	109	107.0	20.8	169	165.9	32.2	229	224.8	43.7	289	283.7	55.1
50	49.1	9.5	110	108.0	21.0	170	166.9	32.4	230	225.8	43.9	290	284.7	55.3
51	50.1	9.7	111	109.0	21.2	171	167.9	32.6	231	226.8	44.1	291	285.7	55.5
52	51.0	9.9	112	109.9	21.4	172	168.8	32.8	232	227.7	44.3	292	286.6	55.7
53	52.0	10.1	113	110.9	21.6	173	169.8	33.0	233	228.7	44.5	293	287.6	55.9
54	53.0	10.3	114	111.9	21.8	174	170.8	33.2	234	229.7	44.6	294	288.6	56.1
55	54.0	10.5	115	112.9	22.1	175	171.8	33.4	235	230.7	44.8	295	289.6	56.3
56	55.0	10.7	116	113.9	22.1	176	172.8	33.6	236	231.7	45.0	296	290.6	56.5
57	56.0	10.9	117	114.9	22.3	177	173.7	33.8	237	232.6	45.2	297	291.5	56.7
58	56.9	11.1	118	115.8	22.5	178	174.7	34.0	238	233.6	45.4	298	292.5	56.9
59	57.9	11.3	119	116.8	22.7	179	175.7	34.2	239	234.6	45.6	299	293.5	57.1
60	58.9	11.4	120	117.8	22.9	180	176.7	34.3	240	235.6	45.8	300	294.5	57.2
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

4 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.1	61	60.8	4.3	121	120.7	8.4	181	180.6	12.6	241	240.4	16.8
2	2.0	0.1	62	61.8	4.3	122	121.7	8.5	182	181.6	12.7	242	241.4	16.9
3	3.0	0.2	63	62.8	4.4	123	122.7	8.6	183	182.6	12.8	243	242.4	17.0
4	4.0	0.3	64	63.8	4.5	124	123.7	8.6	184	183.6	12.8	244	243.4	17.0
5	5.0	0.3	65	64.8	4.5	125	124.7	8.7	185	184.5	12.9	245	244.4	17.1
6	6.0	0.4	66	65.8	4.6	126	125.7	8.8	186	185.5	13.0	246	245.4	17.2
7	7.0	0.5	67	66.8	4.7	127	126.7	8.9	187	186.5	13.0	247	246.4	17.3
8	8.0	0.6	68	67.8	4.7	128	127.7	8.9	188	187.5	13.1	248	247.4	17.3
9	9.0	0.6	69	68.8	4.8	129	128.7	9.0	189	188.5	13.2	249	248.4	17.4
10	10.0	0.7	70	69.8	4.9	130	129.7	9.1	190	189.5	13.3	250	249.4	17.4
11	11.0	0.8	71	70.8	5.0	131	130.7	9.1	191	190.5	13.3	251	250.4	17.5
12	12.0	0.8	72	71.8	5.0	132	131.7	9.2	192	191.5	13.4	252	251.4	17.6
13	13.0	0.9	73	72.8	5.1	133	132.7	9.3	193	192.5	13.5	253	252.4	17.6
14	14.0	1.0	74	73.8	5.2	134	133.7	9.3	194	193.5	13.5	254	253.4	17.7
15	15.0	1.0	75	74.8	5.2	135	134.7	9.4	195	194.5	13.6	255	254.4	17.8
16	16.0	1.1	76	75.8	5.3	136	135.7	9.5	196	195.5	13.7	256	255.4	17.9
17	17.0	1.2	77	76.8	5.4	137	136.7	9.6	197	196.5	13.7	257	256.4	17.9
18	18.0	1.3	78	77.8	5.4	138	137.7	9.6	198	197.5	13.8	258	257.4	18.0
19	19.0	1.3	79	78.8	5.5	139	138.7	9.7	199	198.5	13.9	259	258.4	18.1
20	20.0	1.4	80	79.8	5.6	140	139.7	9.8	200	199.5	14.0	260	259.4	18.1
21	20.9	1.5	81	80.8	5.7	141	140.7	9.8	201	200.5	14.0	261	260.4	18.2
22	21.9	1.5	82	81.8	5.7	142	141.7	9.9	202	201.5	14.1	262	261.4	18.3
23	22.9	1.6	83	82.8	5.8	143	142.7	10.0	203	202.5	14.2	263	262.4	18.3
24	23.9	1.7	84	83.8	5.9	144	143.6	10.0	204	203.5	14.2	264	263.4	18.4
25	24.9	1.7	85	84.8	5.9	145	144.6	10.1	205	204.5	14.3	265	264.4	18.5
26	25.9	1.8	86	85.8	6.0	146	145.6	10.2	206	205.5	14.4	266	265.4	18.6
27	26.9	1.9	87	86.8	6.1	147	146.6	10.3	207	206.5	14.4	267	266.3	18.6
28	27.9	2.0	88	87.8	6.1	148	147.6	10.3	208	207.5	14.5	268	267.3	18.7
29	28.9	2.0	89	88.8	6.2	149	148.6	10.4	209	208.5	14.6	269	268.3	18.8
30	29.9	2.1	90	89.8	6.3	150	149.6	10.5	210	209.5	14.6	270	269.3	18.8
31	30.9	2.2	91	90.8	6.3	151	150.6	10.5	211	210.5	14.7	271	270.3	18.9
32	31.9	2.2	92	91.8	6.4	152	151.6	10.6	212	211.5	14.8	272	271.3	19.0
33	32.9	2.3	93	92.8	6.5	153	152.6	10.7	213	212.5	14.9	273	272.3	19.0
34	33.9	2.4	94	93.8	6.6	154	153.6	10.7	214	213.5	14.9	274	273.3	19.1
35	34.9	2.4	95	94.8	6.6	155	154.6	10.8	215	214.5	15.0	275	274.3	19.2
36	35.9	2.5	96	95.8	6.7	156	155.6	10.9	216	215.5	15.1	276	275.3	19.3
37	36.9	2.6	97	96.8	6.8	157	156.6	11.0	217	216.5	15.1	277	276.3	19.3
38	37.9	2.7	98	97.8	6.8	158	157.6	11.0	218	217.5	15.2	278	277.3	19.4
39	38.9	2.7	99	98.8	6.9	159	158.6	11.1	219	218.5	15.3	279	278.3	19.5
40	39.9	2.8	100	99.8	7.0	160	159.6	11.2	220	219.5	15.3	280	279.3	19.5
41	40.9	2.9	101	100.8	7.0	161	160.6	11.2	221	220.5	15.4	281	280.3	19.6
42	41.9	2.9	102	101.8	7.1	162	161.6	11.3	222	221.5	15.5	282	281.3	19.7
43	42.9	3.0	103	102.7	7.1	163	162.6	11.4	223	222.5	15.6	283	282.3	19.7
44	43.9	3.1	104	103.7	7.3	164	163.6	11.4	224	223.5	15.6	284	283.3	19.8
45	44.9	3.1	105	104.7	7.3	165	164.6	11.5	225	224.5	15.7	285	284.3	19.9
46	45.9	3.2	106	105.7	7.4	166	165.6	11.6	226	225.5	15.8	286	285.3	20.0
47	46.9	3.3	107	106.7	7.5	167	166.6	11.6	227	226.5	15.8	287	286.3	20.0
48	47.9	3.3	108	107.7	7.5	168	167.6	11.7	228	227.5	15.9	288	287.3	20.1
49	48.9	3.4	109	108.7	7.6	169	168.6	11.8	229	228.5	16.0	289	288.3	20.2
50	49.9	3.5	110	109.7	7.7	170	169.6	11.9	230	229.5	16.0	290	289.3	20.2
51	50.9	3.6	111	110.7	7.7	171	170.6	11.9	231	230.4	16.1	291	290.3	20.3
52	51.9	3.6	112	111.7	7.8	172	171.6	12.0	232	231.4	16.2	292	291.3	20.4
53	52.9	3.7	113	112.7	7.9	173	172.6	12.1	233	232.4	16.3	293	292.3	20.4
54	53.9	3.8	114	113.7	8.0	174	173.6	12.1	234	233.4	16.3	294	293.3	20.5
55	54.9	3.8	115	114.7	8.0	175	174.6	12.2	235	234.4	16.4	295	294.3	20.6
56	55.9	3.9	116	115.7	8.1	176	175.6	12.3	236	235.4	16.5	296	295.3	20.6
57	56.9	4.0	117	116.7	8.2	177	176.6	12.3	237	236.4	16.5	297	296.3	20.7
58	57.9	4.0	118	117.7	8.2	178	177.6	12.4	238	237.4	16.6	298	297.3	20.8
59	58.9	4.1	119	118.7	8.3	179	178.6	12.5	239	238.4	16.7	299	298.3	20.9
60	59.9	4.2	120	119.7	8.4	180	179.6	12.6	240	239.4	16.7	300	299.3	20.9
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

86 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

99

5 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.8	5.3	121	120.5	10.5	181	180.3	15.8	241	240.1	21.0
2	2.0	0.2	62	61.8	5.4	122	121.5	10.6	182	181.3	15.9	242	241.1	21.1
3	3.0	0.3	63	62.8	5.5	123	122.5	10.7	183	182.3	15.9	243	242.1	21.2
4	4.0	0.3	64	63.8	5.6	124	123.5	10.8	184	183.3	16.0	244	243.1	21.3
5	5.0	0.4	65	64.8	5.7	125	124.5	10.9	185	184.3	16.1	245	244.1	21.4
6	6.0	0.5	66	65.7	5.8	126	125.5	11.0	186	185.3	16.2	246	245.1	21.4
7	7.0	0.6	67	66.7	5.8	127	126.5	11.1	187	186.3	16.3	247	246.1	21.5
8	8.0	0.7	68	67.7	5.9	128	127.5	11.2	188	187.3	16.4	248	247.1	21.6
9	9.0	0.8	69	68.7	6.0	129	128.5	11.2	189	188.3	16.5	249	248.1	21.7
10	10.0	0.9	70	69.7	6.1	130	129.5	11.3	190	189.3	16.6	250	249.0	21.8
11	11.0	1.0	71	70.7	6.2	131	130.5	11.4	191	190.3	16.6	251	250.0	21.9
12	12.0	1.0	72	71.7	6.3	132	131.5	11.5	192	191.3	16.7	252	251.0	22.0
13	13.0	1.1	73	72.7	6.4	133	132.5	11.6	193	192.3	16.8	253	252.0	22.1
14	13.9	1.2	74	73.7	6.4	134	133.5	11.7	194	193.3	16.9	254	253.0	22.1
15	14.9	1.3	75	74.7	6.5	135	134.5	11.8	195	194.3	17.0	255	254.0	22.2
16	15.9	1.4	76	75.7	6.6	136	135.5	11.9	196	195.3	17.1	256	255.0	22.3
17	16.9	1.5	77	76.7	6.7	137	136.5	11.9	197	196.3	17.2	257	256.0	22.4
18	17.9	1.6	78	77.7	6.8	138	137.5	12.0	198	197.2	17.3	258	257.0	22.5
19	18.9	1.7	79	78.7	6.9	139	138.5	12.1	199	198.2	17.3	259	258.0	22.6
20	19.9	1.7	80	79.7	7.0	140	139.5	12.2	200	199.2	17.4	260	259.0	22.7
21	20.9	1.8	81	80.7	7.1	141	140.5	12.3	201	200.2	17.5	261	260.0	22.7
22	21.9	1.9	82	81.7	7.1	142	141.5	12.4	202	201.2	17.6	262	261.0	22.8
23	22.9	2.0	83	82.7	7.2	143	142.5	12.5	203	202.2	17.7	263	262.0	22.9
24	23.9	2.1	84	83.7	7.3	144	143.5	12.6	204	203.2	17.8	264	263.0	23.0
25	24.9	2.2	85	84.7	7.4	145	144.4	12.6	205	204.2	17.9	265	264.0	23.1
26	25.9	2.3	86	85.7	7.5	146	145.4	12.7	206	205.2	18.0	266	265.0	23.2
27	26.9	2.4	87	86.7	7.6	147	146.4	12.8	207	206.2	18.0	267	266.0	23.3
28	27.9	2.4	88	87.7	7.7	148	147.4	12.9	208	207.2	18.1	268	267.0	23.4
29	28.9	2.5	89	88.7	7.8	149	148.4	13.0	209	208.2	18.2	269	268.0	23.4
30	29.9	2.6	90	89.7	7.8	150	149.4	13.1	210	209.2	18.3	270	269.0	23.5
31	30.9	2.7	91	90.7	7.9	151	150.4	13.2	211	210.2	18.4	271	270.0	23.6
32	31.9	2.8	92	91.6	8.0	152	151.4	13.2	212	211.2	18.5	272	271.0	23.7
33	32.9	2.9	93	92.6	8.1	153	152.4	13.3	213	212.2	18.6	273	272.0	23.8
34	33.9	3.0	94	93.6	8.2	154	153.4	13.4	214	213.2	18.7	274	273.0	23.9
35	34.9	3.1	95	94.6	8.3	155	154.4	13.5	215	214.2	18.7	275	274.0	24.0
36	35.9	3.1	96	95.6	8.4	156	155.4	13.6	216	215.2	18.8	276	274.9	24.1
37	36.9	3.2	97	96.6	8.5	157	156.4	13.7	217	216.2	18.9	277	275.9	24.1
38	37.9	3.3	98	97.6	8.5	158	157.4	13.8	218	217.2	19.0	278	276.9	24.2
39	38.9	3.4	99	98.6	8.6	159	158.4	13.9	219	218.2	19.1	279	277.9	24.3
40	39.8	3.5	100	99.6	8.7	160	159.4	13.9	220	219.2	19.2	280	278.9	24.4
41	40.8	3.6	101	100.6	8.8	161	160.4	14.0	221	220.2	19.3	281	279.9	24.5
42	41.8	3.7	102	101.6	8.9	162	161.4	14.1	222	221.2	19.3	282	280.9	24.6
43	42.8	3.7	103	102.6	9.0	163	162.4	14.2	223	222.2	19.4	283	281.9	24.7
44	43.8	3.8	104	103.6	9.1	164	163.4	14.3	224	223.1	19.5	284	282.9	24.8
45	44.8	3.9	105	104.6	9.2	165	164.4	14.4	225	224.1	19.6	285	283.9	24.8
46	45.8	4.0	106	105.6	9.2	166	165.4	14.5	226	225.1	19.7	286	284.9	24.9
47	46.8	4.1	107	106.6	9.3	167	166.4	14.6	227	226.1	19.8	287	285.9	25.0
48	47.8	4.2	108	107.6	9.4	168	167.4	14.6	228	227.1	19.9	288	286.9	25.1
49	48.8	4.3	109	108.6	9.5	169	168.4	14.7	229	228.1	20.0	289	287.9	25.2
50	49.8	4.4	110	109.6	9.6	170	169.4	14.8	230	229.1	20.0	290	288.9	25.3
51	50.8	4.4	111	110.6	9.7	171	170.3	14.9	231	230.1	20.1	291	289.9	25.4
52	51.8	4.5	112	111.6	9.8	172	171.3	15.0	232	231.1	20.2	292	290.9	25.4
53	52.8	4.6	113	112.6	9.8	173	172.3	15.1	233	232.1	20.3	293	291.9	25.5
54	53.8	4.7	114	113.6	9.9	174	173.3	15.2	234	233.1	20.4	294	292.9	25.6
55	54.8	4.8	115	114.6	10.0	175	174.3	15.3	235	234.1	20.5	295	293.9	25.7
56	55.8	4.9	116	115.6	10.1	176	175.3	15.3	236	235.1	20.6	296	294.9	25.8
57	56.8	5.0	117	116.6	10.2	177	176.3	15.4	237	236.1	20.7	297	295.9	25.9
58	57.8	5.1	118	117.6	10.3	178	177.3	15.5	238	237.1	20.7	298	296.9	26.0
59	58.8	5.1	119	118.5	10.4	179	178.3	15.6	239	238.1	20.8	299	297.9	26.1
60	59.8	5.2	120	119.5	10.5	180	179.3	15.7	240	239.1	20.9	300	298.9	26.1

85 Degrees.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

6 Degrees.											
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.1	61	60.7	6.4	121	120.3	12.6	181	180.0	18.9
2	2.0	0.2	62	61.7	6.5	122	121.3	12.8	182	181.0	19.0
3	3.0	0.3	63	62.7	6.6	123	122.3	12.9	183	182.0	19.1
4	4.0	0.4	64	63.6	6.7	124	123.3	13.0	184	183.0	19.2
5	5.0	0.5	65	64.6	6.8	125	124.3	13.1	185	184.0	19.3
6	6.0	0.6	66	65.6	6.9	126	125.3	13.2	186	185.0	19.4
7	7.0	0.7	67	66.6	7.0	127	126.3	13.3	187	186.0	19.5
8	8.0	0.8	68	67.6	7.1	128	127.3	13.4	188	187.0	19.7
9	9.0	0.9	69	68.6	7.2	129	128.3	13.5	189	188.0	19.8
10	9.9	1.0	70	69.6	7.3	130	129.3	13.6	190	189.0	19.9
11	10.9	1.1	71	70.6	7.4	131	130.3	13.7	191	190.0	20.0
12	11.9	1.3	72	71.6	7.5	132	131.3	13.8	192	190.9	20.1
13	12.9	1.4	73	72.6	7.6	133	132.3	13.9	193	191.9	20.2
14	13.9	1.5	74	73.6	7.7	134	133.3	14.0	194	192.9	20.3
15	14.9	1.6	75	74.6	7.8	135	134.3	14.1	195	193.9	20.4
16	15.9	1.7	76	75.6	7.9	136	135.3	14.2	196	194.9	20.5
17	16.9	1.8	77	76.6	8.0	137	136.2	14.3	197	195.9	20.6
18	17.9	1.9	78	77.6	8.2	138	137.2	14.4	198	196.9	20.7
19	18.9	2.0	79	78.6	8.3	139	138.2	14.5	199	197.9	20.8
20	19.9	2.1	80	79.6	8.4	140	139.2	14.6	200	198.9	20.9
21	20.9	2.2	81	80.6	8.5	141	140.2	14.7	201	199.9	21.0
22	21.9	2.3	82	81.6	8.6	142	141.2	14.8	202	200.9	21.1
23	22.9	2.4	83	82.5	8.7	143	142.2	14.9	203	201.9	21.2
24	23.9	2.5	84	83.5	8.8	144	143.2	15.1	204	202.9	21.3
25	24.9	2.6	85	84.5	8.9	145	144.2	15.2	205	203.9	21.4
26	25.9	2.7	86	85.5	9.0	146	145.2	15.3	206	204.9	21.5
27	26.9	2.8	87	86.5	9.1	147	146.2	15.4	207	205.9	21.6
28	27.8	2.9	88	87.5	9.2	148	147.2	15.5	208	206.9	21.7
29	28.8	3.0	89	88.5	9.3	149	148.2	15.6	209	207.9	21.8
30	29.8	3.1	90	89.5	9.4	150	149.2	15.7	210	208.8	22.0
31	30.8	3.2	91	90.5	9.5	151	150.2	15.8	211	209.8	22.1
32	31.8	3.3	92	91.5	9.6	152	151.2	15.9	212	210.8	22.2
33	32.8	3.4	93	92.5	9.7	153	152.2	16.0	213	211.8	22.3
34	33.8	3.6	94	93.5	9.8	154	153.2	16.1	214	212.8	22.4
35	34.8	3.7	95	94.5	9.9	155	154.2	16.2	215	213.8	22.5
36	35.8	3.8	96	95.5	10.0	156	155.1	16.3	216	214.8	22.6
37	36.8	3.9	97	96.5	10.1	157	156.1	16.4	217	215.8	22.7
38	37.8	4.0	98	97.5	10.2	158	157.1	16.5	218	216.8	22.8
39	38.8	4.1	99	98.5	10.3	159	158.1	16.6	219	217.8	22.9
40	39.8	4.2	100	99.5	10.5	160	159.1	16.7	220	218.8	23.0
41	40.8	4.3	101	100.4	10.6	161	160.1	16.8	221	219.8	23.1
42	41.8	4.4	102	101.4	10.7	162	161.1	16.9	222	220.8	23.2
43	42.8	4.5	103	102.4	10.8	163	162.1	17.0	223	221.8	23.3
44	43.8	4.6	104	103.4	10.9	164	163.1	17.1	224	222.8	23.4
45	44.8	4.7	105	104.4	11.0	165	164.1	17.2	225	223.8	23.5
46	45.7	4.8	106	105.4	11.1	166	165.1	17.4	226	224.8	23.6
47	46.7	4.9	107	106.4	11.2	167	166.1	17.5	227	225.8	23.7
48	47.7	5.0	108	107.4	11.3	168	167.1	17.6	228	226.8	23.8
49	48.7	5.1	109	108.4	11.4	169	168.1	17.7	229	227.7	23.9
50	49.7	5.2	110	109.4	11.5	170	169.1	17.8	230	228.7	24.0
51	50.7	5.3	111	110.4	11.6	171	170.1	17.9	231	229.7	24.1
52	51.7	5.4	112	111.4	11.7	172	171.1	18.0	232	230.7	24.3
53	52.7	5.5	113	112.4	11.8	173	172.1	18.1	233	231.7	24.4
54	53.7	5.6	114	113.4	11.9	174	173.0	18.2	234	232.7	24.5
55	54.7	5.7	115	114.4	12.0	175	174.0	18.3	235	233.7	24.6
56	55.7	5.9	116	115.4	12.1	176	175.0	18.4	236	234.7	24.7
57	56.7	6.0	117	116.4	12.2	177	176.0	18.5	237	235.7	24.8
58	57.7	6.1	118	117.4	12.3	178	177.0	18.6	238	236.7	24.9
59	58.7	6.2	119	118.3	12.4	179	178.0	18.7	239	237.7	25.0
60	59.7	6.3	120	119.3	12.5	180	179.0	18.8	240	238.7	25.1
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

101

7 Degrees.

Dist.	D.Dat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.5	7.4	121	120.1	14.7	181	179.7	22.1	241	239.2	29.4
2	2.0	0.2	62	61.5	7.6	122	121.1	14.9	182	180.6	22.2	242	240.2	29.5
3	3.0	0.4	63	62.5	7.7	123	122.1	15.0	183	181.6	22.3	243	241.2	29.6
4	4.0	0.5	64	63.5	7.8	124	123.1	15.1	184	182.6	22.4	244	242.2	29.7
5	5.0	0.6	65	64.5	7.9	125	124.1	15.2	185	183.6	22.5	245	243.2	29.9
6	6.0	0.7	66	65.5	8.0	126	125.1	15.4	186	184.6	22.7	246	244.2	30.0
7	6.9	0.9	67	66.5	8.2	127	126.1	15.5	187	185.6	22.8	247	245.2	30.1
8	7.9	1.0	68	67.5	8.3	128	127.0	15.6	188	186.6	22.9	248	246.2	30.2
9	8.9	1.1	69	68.5	8.4	129	128.0	15.7	189	187.6	23.0	249	247.1	30.3
10	9.9	1.2	70	69.5	8.5	130	129.0	15.8	190	188.6	23.2	250	248.1	30.5
11	10.9	1.3	71	70.5	8.7	131	130.0	16.0	191	189.6	23.3	251	249.1	30.6
12	11.9	1.5	72	71.5	8.8	132	131.0	16.1	192	190.6	23.4	252	250.1	30.7
13	12.9	1.6	73	72.5	8.9	133	132.0	16.2	193	191.6	23.5	253	251.1	30.8
14	13.9	1.7	74	73.4	9.0	134	133.0	16.3	194	192.6	23.6	254	252.1	31.0
15	14.9	1.8	75	74.4	9.1	135	134.0	16.5	195	193.5	23.8	255	253.1	31.1
16	15.9	1.9	76	75.4	9.3	136	135.0	16.6	196	194.5	23.9	256	254.1	31.2
17	16.9	2.1	77	76.4	9.4	137	136.0	16.7	197	195.5	24.0	257	255.1	31.3
18	17.9	2.2	78	77.4	9.5	138	137.0	16.8	198	196.5	24.1	258	256.1	31.4
19	18.9	2.3	79	78.4	9.6	139	138.0	16.9	199	197.5	24.3	259	257.1	31.6
20	19.9	2.4	80	79.4	9.7	140	139.0	17.1	200	198.5	24.4	260	258.1	31.7
21	20.8	2.6	81	80.4	9.9	141	139.9	17.2	201	199.5	24.5	261	259.1	31.8
22	21.8	2.7	82	81.4	10.0	142	140.9	17.3	202	200.5	24.6	262	260.0	31.9
23	22.8	2.8	83	82.4	10.1	143	141.9	17.4	203	201.5	24.7	263	261.0	32.1
24	23.8	2.9	84	83.4	10.2	144	142.9	17.5	204	202.5	24.9	264	262.0	32.2
25	24.8	3.0	85	84.4	10.4	145	143.9	17.7	205	203.5	25.0	265	263.0	32.3
26	25.8	3.2	86	85.4	10.5	146	144.9	17.8	206	204.5	25.1	266	264.0	32.4
27	26.8	3.3	87	86.4	10.6	147	145.9	17.9	207	205.5	25.2	267	265.0	32.5
28	27.8	3.4	88	87.3	10.7	148	146.9	18.0	208	206.4	25.3	268	266.0	32.7
29	28.8	3.5	89	88.3	10.8	149	147.9	18.2	209	207.4	25.5	269	267.0	32.8
30	29.8	3.7	90	89.3	11.0	150	148.9	18.3	210	208.4	25.6	270	268.0	32.9
31	30.8	3.8	91	90.3	11.1	151	149.9	18.4	211	209.4	25.7	271	269.0	33.0
32	31.8	3.9	92	91.3	11.2	152	150.9	18.5	212	210.4	25.8	272	270.0	33.1
33	32.8	4.0	93	92.3	11.3	153	151.9	18.6	213	211.4	26.0	273	271.0	33.3
34	33.7	4.1	94	93.3	11.5	154	152.9	18.8	214	212.4	26.1	274	272.0	33.4
35	34.7	4.3	95	94.3	11.6	155	153.8	18.9	215	213.4	26.2	275	273.0	33.5
36	35.7	4.4	96	95.3	11.7	156	154.8	19.0	216	214.4	26.3	276	273.9	33.6
37	36.7	4.5	97	96.3	11.8	157	155.8	19.1	217	215.4	26.4	277	274.9	33.8
38	37.7	4.6	98	97.3	11.9	158	156.8	19.3	218	216.4	26.6	278	275.9	33.9
39	38.7	4.8	99	98.3	12.1	159	157.8	19.4	219	217.4	26.7	279	276.9	34.0
40	39.7	4.9	100	99.3	12.2	160	158.8	19.5	220	218.4	26.8	280	277.9	34.1
41	40.7	5.0	101	100.2	12.3	161	159.8	19.6	221	219.4	26.9	281	278.9	34.2
42	41.7	5.1	102	101.2	12.4	162	160.8	19.7	222	220.3	27.1	282	279.9	34.4
43	42.7	5.2	103	102.2	12.6	163	161.8	19.9	223	221.3	27.2	283	280.9	34.5
44	43.7	5.4	104	103.2	12.7	164	162.8	20.0	224	222.3	27.3	284	281.9	34.6
45	44.7	5.5	105	104.3	12.8	165	163.8	20.1	225	223.3	27.4	285	282.9	34.7
46	45.7	5.6	106	105.2	12.9	166	164.8	20.2	226	224.3	27.5	286	283.9	34.9
47	46.6	5.7	107	106.2	13.0	167	165.8	20.4	227	225.3	27.7	287	284.9	35.0
48	47.6	5.8	108	107.2	13.2	168	166.7	20.5	228	226.3	27.8	288	285.9	35.1
49	48.6	6.0	109	108.2	13.3	169	167.7	20.6	229	227.3	27.9	289	286.8	35.2
50	49.6	6.1	110	109.2	13.4	170	168.7	20.7	230	228.3	28.0	290	287.8	35.3
51	50.6	6.2	111	110.2	13.5	171	169.7	20.8	231	229.3	28.2	291	288.8	35.5
52	51.6	6.3	112	111.2	13.6	172	170.7	21.0	232	230.3	28.3	292	289.8	35.6
53	52.6	6.5	113	112.2	13.8	173	171.7	21.1	233	231.3	28.4	293	290.8	35.7
54	53.6	6.6	114	113.2	13.9	174	172.7	21.2	234	232.3	28.5	294	291.8	35.8
55	54.6	6.7	115	114.1	14.0	175	173.7	21.3	235	233.2	28.6	295	292.8	36.0
56	55.6	6.8	116	115.1	14.1	176	174.7	21.4	236	234.2	28.8	296	293.8	36.1
57	56.6	6.9	117	116.1	14.3	177	175.7	21.6	237	235.2	28.9	297	294.8	36.2
58	57.6	7.1	118	117.1	14.4	178	176.7	21.7	238	236.2	29.0	298	295.8	36.3
59	58.6	7.2	119	118.1	14.5	179	177.7	21.8	239	237.2	29.1	299	296.8	36.4
60	59.6	7.3	120	119.1	14.6	180	178.7	21.9	240	238.2	29.2	300	297.8	36.6
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

83 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

8 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.1	61	60.4	8.5	121	119.8	16.8	181	179.2	25.2
2	2.0	0.3	62	61.4	8.6	122	120.8	17.0	182	180.2	25.3
3	3.0	0.4	63	62.4	8.8	123	121.8	17.1	183	181.2	25.5
4	4.0	0.6	64	63.4	8.9	124	122.8	17.3	184	182.2	25.6
5	5.0	0.7	65	64.4	9.0	125	123.8	17.4	185	183.2	25.7
6	5.9	0.8	66	65.4	9.2	126	124.8	17.5	186	184.2	25.9
7	6.9	1.0	67	66.3	9.3	127	125.8	17.7	187	185.2	26.0
8	7.9	1.1	68	67.3	9.5	128	126.8	17.8	188	186.2	26.2
9	8.9	1.3	69	68.3	9.6	129	127.7	18.0	189	187.2	26.3
10	9.9	1.4	70	69.3	9.7	130	128.7	18.1	190	188.2	26.4
11	10.9	1.5	71	70.3	9.9	131	129.7	18.2	191	189.1	26.6
12	11.9	1.7	72	71.3	10.0	132	130.7	18.4	192	190.1	26.7
13	12.9	1.8	73	72.3	10.2	133	131.7	18.5	193	191.1	26.9
14	13.9	1.9	74	73.3	10.3	134	132.7	18.6	194	192.1	27.0
15	14.9	2.1	75	74.3	10.4	135	133.7	18.8	195	193.1	27.1
16	15.8	2.2	76	75.3	10.6	136	134.7	18.9	196	194.1	27.3
17	16.8	2.4	77	76.3	10.7	137	135.7	19.1	197	195.1	27.4
18	17.8	2.5	78	77.2	10.9	138	136.7	19.2	198	196.1	27.6
19	18.8	2.6	79	78.2	11.0	139	137.7	19.3	199	197.1	27.7
20	19.8	2.8	80	79.2	11.1	140	138.6	19.5	200	198.1	27.8
21	20.8	2.9	81	80.2	11.3	141	139.6	19.6	201	199.0	28.0
22	21.8	3.1	82	81.2	11.4	142	140.6	19.8	202	200.0	28.1
23	22.8	3.2	83	82.2	11.6	143	141.6	19.9	203	201.0	28.3
24	23.8	3.3	84	83.2	11.7	144	142.6	20.0	204	202.0	28.4
25	24.8	3.5	85	84.2	11.8	145	143.6	20.2	205	203.0	28.5
26	25.7	3.6	86	85.2	12.0	146	144.6	20.3	206	204.0	28.7
27	26.7	3.8	87	86.2	12.1	147	145.6	20.5	207	205.0	28.8
28	27.7	3.9	88	87.1	12.2	148	146.6	20.6	208	206.0	28.9
29	28.7	4.0	89	88.1	12.4	149	147.5	20.7	209	207.0	29.1
30	29.7	4.2	90	89.1	12.5	150	148.5	20.9	210	208.0	29.2
31	30.7	4.3	91	90.1	12.7	151	149.5	21.0	211	208.9	29.4
32	31.7	4.5	92	91.1	12.8	152	150.5	21.2	212	209.9	29.5
33	32.7	4.6	93	92.1	12.9	153	151.5	21.3	213	210.9	29.6
34	33.7	4.7	94	93.1	13.1	154	152.5	21.4	214	211.9	29.8
35	34.7	4.9	95	94.1	13.2	155	153.5	21.6	215	212.9	29.9
36	35.6	5.0	96	95.1	13.4	156	154.5	21.7	216	213.9	30.1
37	36.6	5.1	97	96.1	13.5	157	155.5	21.9	217	214.9	30.2
38	37.6	5.3	98	97.0	13.6	158	156.5	22.0	218	215.9	30.3
39	38.6	5.4	99	98.0	13.8	159	157.5	22.1	219	216.9	30.5
40	39.6	5.6	100	99.0	13.9	160	158.4	22.3	220	217.9	30.6
41	40.6	5.7	101	100.0	14.1	161	159.4	22.4	221	218.8	30.8
42	41.6	5.8	102	101.0	14.2	162	160.4	22.5	222	219.8	30.9
43	42.6	6.0	103	102.0	14.3	163	161.4	22.7	223	220.8	31.0
44	43.6	6.1	104	103.0	14.5	164	162.4	22.8	224	221.8	31.2
45	44.6	6.3	105	104.0	14.6	165	163.4	23.0	225	222.8	31.3
46	45.6	6.4	106	105.0	14.8	166	164.4	23.1	226	223.8	31.5
47	46.5	6.5	107	106.0	14.9	167	165.4	23.2	227	224.8	31.6
48	47.5	6.7	108	106.9	15.0	168	166.4	23.4	228	225.8	31.7
49	48.5	6.8	109	107.9	15.2	169	167.4	23.5	229	226.8	31.9
50	49.5	7.0	110	108.9	15.3	170	168.3	23.7	230	227.8	32.0
51	50.5	7.1	111	109.9	15.4	171	169.3	23.8	231	228.8	32.1
52	51.5	7.2	112	110.9	15.6	172	170.3	23.9	232	229.7	32.3
53	52.5	7.4	113	111.9	15.7	173	171.3	24.1	233	230.7	32.4
54	53.5	7.5	114	112.9	15.9	174	172.3	24.2	234	231.7	32.6
55	54.5	7.7	115	113.9	16.0	175	173.3	24.4	235	232.7	32.7
56	55.5	7.8	116	114.9	16.1	176	174.3	24.5	236	233.7	32.8
57	56.4	7.9	117	115.9	16.3	177	175.3	24.6	237	234.7	33.0
58	57.4	8.1	118	116.9	16.4	178	176.3	24.8	238	235.7	33.1
59	58.4	8.2	119	117.8	16.6	179	177.3	24.9	239	236.7	33.3
60	59.4	8.4	120	118.8	16.7	180	178.2	25.1	240	237.7	33.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TABLE XIII.

103

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

9 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.2	61	60.2	9.5	121	119.5	18.9	181	178.8	28.3
2	2.0	0.3	62	61.2	9.7	122	120.5	19.1	182	179.8	28.5
3	3.0	0.5	63	62.2	9.9	123	121.5	19.2	183	180.7	28.6
4	4.0	0.6	64	63.2	10.0	124	122.5	19.4	184	181.7	28.8
5	4.9	0.8	65	64.2	10.2	125	123.5	19.6	185	182.7	28.9
6	5.9	0.9	66	65.2	10.3	126	124.4	19.7	186	183.7	29.1
7	6.9	1.1	67	66.2	10.5	127	125.4	19.9	187	184.7	29.3
8	7.9	1.3	68	67.2	10.6	128	126.4	20.0	188	185.7	29.4
9	8.9	1.4	69	68.2	10.8	129	127.4	20.2	189	186.7	29.6
10	9.9	1.6	70	69.1	11.0	130	128.4	20.3	190	187.7	29.7
11	10.9	1.7	71	70.1	11.1	131	129.4	20.5	191	188.6	29.9
12	11.9	1.9	72	71.1	11.3	132	130.4	20.6	192	189.6	30.0
13	12.8	2.0	73	72.1	11.4	133	131.4	20.8	193	190.6	30.2
14	13.8	2.2	74	73.1	11.6	134	132.4	21.0	194	191.6	30.3
15	14.8	2.3	75	74.1	11.7	135	133.3	21.1	195	192.6	30.5
16	15.8	2.5	76	75.1	11.9	136	134.3	21.3	196	193.6	30.7
17	16.8	2.7	77	76.1	12.0	137	135.3	21.4	197	194.6	30.8
18	17.8	2.8	78	77.0	12.2	138	136.3	21.6	198	195.6	31.0
19	18.8	3.0	79	78.0	12.4	139	137.3	21.7	199	196.5	31.1
20	19.8	3.1	80	79.0	12.5	140	138.3	21.9	200	197.5	31.3
21	20.7	3.3	81	80.0	12.7	141	139.3	22.1	201	198.5	31.4
22	21.7	3.4	82	81.0	12.8	142	140.3	22.2	202	199.5	31.6
23	22.7	3.6	83	82.0	13.0	143	141.2	22.4	203	200.5	31.8
24	23.7	3.8	84	83.0	13.1	144	142.2	22.5	204	201.5	31.9
25	24.7	3.9	85	84.0	13.3	145	143.2	22.7	205	202.5	32.1
26	25.7	4.1	86	84.9	13.5	146	144.2	22.8	206	203.5	32.2
27	26.7	4.2	87	85.9	13.6	147	145.2	23.0	207	204.5	32.4
28	27.7	4.4	88	86.9	13.8	148	146.2	23.2	208	205.4	32.5
29	28.6	4.5	89	87.9	13.9	149	147.2	23.3	209	206.4	32.7
30	29.6	4.7	90	88.9	14.1	150	148.2	23.5	210	207.4	32.9
31	30.6	4.8	91	89.9	14.2	151	149.1	23.6	211	208.4	33.0
32	31.6	5.0	92	90.9	14.4	152	150.1	23.8	212	209.4	33.2
33	32.6	5.2	93	91.9	14.5	153	151.1	23.9	213	210.4	33.3
34	33.6	5.3	94	92.8	14.7	154	152.1	24.1	214	211.4	33.5
35	34.6	5.5	95	93.8	14.9	155	153.1	24.2	215	212.4	33.6
36	35.6	5.6	96	94.8	15.0	156	154.1	24.4	216	213.3	33.8
37	36.5	5.8	97	95.8	15.2	157	155.1	24.6	217	214.3	33.9
38	37.5	5.9	98	96.8	15.3	158	156.1	24.7	218	215.3	34.1
39	38.5	6.1	99	97.8	15.5	159	157.0	24.9	219	216.3	34.3
40	39.5	6.3	100	98.8	15.6	160	158.0	25.0	220	217.3	34.4
41	40.5	6.4	101	99.8	15.8	161	159.0	25.2	221	218.3	34.6
42	41.5	6.6	102	100.7	16.0	162	160.0	25.3	222	219.3	34.7
43	42.5	6.7	103	101.7	16.1	163	161.0	25.5	223	220.3	34.9
44	43.5	6.9	104	102.7	16.3	164	162.0	25.7	224	221.2	35.0
45	44.4	7.0	105	103.7	16.4	165	163.0	25.8	225	222.2	35.2
46	45.4	7.2	106	104.7	16.6	166	164.0	26.0	226	223.2	35.4
47	46.4	7.4	107	105.7	16.7	167	164.9	26.1	227	224.2	35.5
48	47.4	7.5	108	106.7	16.9	168	165.9	26.3	228	225.2	35.7
49	48.4	7.7	109	107.7	17.1	169	166.9	26.4	229	226.2	35.8
50	49.4	7.8	110	108.6	17.2	170	167.9	26.6	230	227.2	36.0
51	50.4	8.0	111	109.6	17.4	171	168.9	26.8	231	228.2	36.1
52	51.4	8.1	112	110.6	17.5	172	169.9	26.9	232	229.1	36.3
53	52.3	8.3	113	111.6	17.7	173	170.9	27.1	233	230.1	36.4
54	53.3	8.4	114	112.6	17.8	174	171.9	27.2	234	231.1	36.6
55	54.3	8.6	115	113.6	18.0	175	172.8	27.4	235	232.1	36.8
56	55.3	8.8	116	114.6	18.1	176	173.8	27.5	236	233.1	36.9
57	56.3	8.9	117	115.6	18.3	177	174.8	27.7	237	234.1	37.1
58	57.3	9.1	118	116.5	18.5	178	175.8	27.8	238	235.1	37.2
59	58.3	9.2	119	117.5	18.6	179	176.8	28.0	239	236.1	37.4
60	59.3	9.4	120	118.5	18.8	180	177.8	28.2	240	237.0	37.5
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

RT Degrees

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

10 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	60.1	10.6	121	119.2	21.0	181	178.3	31.4	241	237.3	41.8
2	2.0	0.3	62	61.1	10.8	122	120.1	21.2	182	179.2	31.6	242	238.3	42.0
3	3.0	0.5	63	62.0	10.9	123	121.1	21.4	183	180.2	31.8	243	239.3	42.2
4	3.9	0.7	64	63.0	11.1	124	122.1	21.5	184	181.2	32.0	244	240.3	42.4
5	4.9	0.9	65	64.0	11.3	125	123.1	21.7	185	182.2	32.1	245	241.3	42.5
6	5.9	1.0	66	65.0	11.5	126	124.1	21.9	186	183.2	32.3	246	242.3	42.7
7	6.9	1.2	67	66.0	11.6	127	125.1	22.1	187	184.2	32.5	247	243.2	42.9
8	7.9	1.4	68	67.0	11.8	128	126.1	22.2	188	185.1	32.6	248	244.2	43.1
9	8.9	1.6	69	68.0	12.0	129	127.0	22.4	189	186.1	32.8	249	245.2	43.2
10	9.8	1.7	70	68.9	12.2	130	128.0	22.6	190	187.1	33.0	250	246.2	43.4
11	10.8	1.9	71	69.9	12.3	131	129.0	22.7	191	188.1	33.2	251	247.2	43.6
12	11.8	2.1	72	70.9	12.5	132	130.0	22.9	192	189.1	33.3	252	248.2	43.8
13	12.8	2.3	73	71.9	12.7	133	131.0	23.1	193	190.1	33.5	253	249.2	43.9
14	13.8	2.4	74	72.9	12.8	134	132.0	23.3	194	191.1	33.7	254	250.1	44.1
15	14.8	2.6	75	73.9	13.0	135	132.9	23.4	195	192.0	33.9	255	251.1	44.3
16	15.8	2.8	76	74.8	13.2	136	133.9	23.6	196	193.0	34.0	256	252.1	44.5
17	16.7	3.0	77	75.8	13.4	137	134.9	23.8	197	194.0	34.2	257	253.1	44.6
18	17.7	3.1	78	76.8	13.5	138	135.9	24.0	198	195.0	34.4	258	254.1	44.8
19	18.7	3.3	79	77.8	13.7	139	136.9	24.1	199	196.0	34.6	259	255.1	45.0
20	19.7	3.5	80	78.8	13.9	140	137.9	24.3	200	197.0	34.7	260	256.1	45.1
21	20.7	3.6	81	79.8	14.1	141	138.9	24.5	201	197.9	34.9	261	257.0	45.3
22	21.7	3.8	82	80.8	14.2	142	139.8	24.7	202	198.9	35.1	262	258.0	45.5
23	22.7	4.0	83	81.7	14.4	143	140.8	24.8	203	199.9	35.3	263	259.0	45.7
24	23.6	4.2	84	82.7	14.6	144	141.8	25.0	204	200.9	35.4	264	260.0	45.8
25	24.6	4.3	85	83.7	14.8	145	142.8	25.2	205	201.9	35.6	265	261.0	46.0
26	25.6	4.5	86	84.7	14.9	146	143.8	25.4	206	202.9	35.8	266	262.0	46.2
27	26.6	4.7	87	85.7	15.1	147	144.8	25.5	207	203.9	35.9	267	262.9	46.4
28	27.6	4.9	88	86.7	15.3	148	145.8	25.7	208	204.8	36.1	268	263.9	46.5
29	28.6	5.0	89	87.6	15.5	149	146.7	25.9	209	205.8	36.3	269	264.9	46.7
30	29.5	5.2	90	88.6	15.6	150	147.7	26.0	210	206.8	36.5	270	265.9	46.9
31	30.5	5.4	91	89.6	15.8	151	148.7	26.2	211	207.8	36.6	271	266.9	47.1
32	31.5	5.6	92	90.6	16.0	152	149.7	26.4	212	208.8	36.8	272	267.9	47.3
33	32.5	5.7	93	91.6	16.1	153	150.7	26.6	213	209.8	37.0	273	268.9	47.4
34	33.5	5.9	94	92.6	16.3	154	151.7	26.7	214	210.7	37.2	274	269.8	47.6
35	34.5	6.1	95	93.6	16.5	155	152.6	26.9	215	211.7	37.3	275	270.8	47.8
36	35.5	6.3	96	94.5	16.7	156	153.6	27.1	216	212.7	37.5	276	271.8	47.9
37	36.4	6.4	97	95.5	16.8	157	154.6	27.3	217	213.7	37.7	277	272.8	48.1
38	37.4	6.6	98	96.5	17.0	158	155.6	27.4	218	214.7	37.9	278	273.8	48.3
39	38.4	6.8	99	97.5	17.2	159	156.6	27.6	219	215.7	38.0	279	274.8	48.4
40	39.4	6.9	100	98.5	17.4	160	157.6	27.8	220	216.7	38.2	280	275.7	48.6
41	40.4	7.1	101	99.5	17.5	161	158.6	28.0	221	217.6	38.4	281	276.7	48.8
42	41.4	7.3	102	100.5	17.7	162	159.5	28.1	222	218.6	38.5	282	277.7	49.0
43	42.3	7.5	103	101.4	17.9	163	160.5	28.3	223	219.6	38.7	283	278.7	49.1
44	43.3	7.6	104	102.4	18.1	164	161.5	28.5	224	220.6	38.9	284	279.7	49.3
45	44.3	7.8	105	103.4	18.2	165	162.5	28.7	225	221.6	39.1	285	280.7	49.5
46	45.3	8.0	106	104.4	18.4	166	163.5	28.8	226	222.6	39.2	286	281.7	49.7
47	46.3	8.2	107	105.4	18.6	167	164.5	29.0	227	223.6	39.4	287	282.6	49.8
48	47.3	8.3	108	106.4	18.8	168	165.4	29.2	228	224.5	39.6	288	283.6	50.0
49	48.3	8.5	109	107.3	18.9	169	166.4	29.3	229	225.5	39.8	289	284.6	50.2
50	49.2	8.7	110	108.3	19.1	170	167.4	29.5	230	226.5	39.9	290	285.6	50.4
51	50.2	8.9	111	109.3	19.3	171	168.4	29.7	231	227.5	40.1	291	286.6	50.5
52	51.2	9.0	112	110.3	19.4	172	169.4	29.9	232	228.5	40.3	292	287.6	50.7
53	52.2	9.2	113	111.3	19.6	173	170.4	30.0	233	229.5	40.5	293	288.5	50.9
54	53.2	9.4	114	112.3	19.8	174	171.4	30.2	234	230.4	40.6	294	289.5	51.1
55	54.2	9.6	115	113.3	20.0	175	172.3	30.4	235	231.4	40.8	295	290.5	51.2
56	55.1	9.7	116	114.2	20.1	176	173.3	30.6	236	232.4	41.0	296	291.5	51.4
57	56.1	9.9	117	115.2	20.3	177	174.3	30.7	237	233.4	41.2	297	292.5	51.6
58	57.1	10.1	118	116.2	20.5	178	175.3	30.9	238	234.4	41.3	298	293.5	51.7
59	58.1	10.2	119	117.2	20.7	179	176.3	31.1	239	235.4	41.5	299	294.5	51.9
60	59.1	10.4	120	118.2	20.8	180	177.3	31.3	240	236.4	41.7	300	295.4	52.1
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

80 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

105

11 Degrees.

Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.
1	1.0	0.2	61	59.9	11.6	121	118.8	23.1	181	177.7	34.5	241	236.6	46.0
2	2.0	0.4	62	60.9	11.8	122	119.8	23.3	182	178.7	34.7	242	237.6	46.2
3	2.9	0.6	63	61.8	12.0	123	120.7	23.5	183	179.6	34.9	243	238.5	46.4
4	3.9	0.8	64	62.8	12.2	124	121.7	23.7	184	180.6	35.1	244	239.5	46.6
5	4.9	1.0	65	63.8	12.4	125	122.7	23.9	185	181.6	35.3	245	240.5	46.7
6	5.9	1.1	66	64.8	12.6	126	123.7	24.0	186	182.6	35.5	246	241.5	46.9
7	6.9	1.3	67	65.8	12.8	127	124.7	24.2	187	183.6	35.7	247	242.5	47.1
8	7.9	1.5	68	66.8	13.0	128	125.6	24.4	188	184.5	35.9	248	243.4	47.3
9	8.8	1.7	69	67.7	13.2	129	126.6	24.6	189	185.5	36.1	249	244.4	47.5
10	9.8	1.9	70	68.7	13.4	130	127.6	24.8	190	186.5	36.3	250	245.4	47.7
11	10.8	2.1	71	69.7	13.5	131	128.6	25.0	191	187.5	36.4	251	246.4	47.9
12	11.8	2.3	72	70.7	13.7	132	129.6	25.2	192	188.5	36.6	252	247.4	48.1
13	12.8	2.5	73	71.7	13.9	133	130.6	25.4	193	189.5	36.8	253	248.4	48.3
14	13.7	2.7	74	72.6	14.1	134	131.5	25.6	194	190.4	37.0	254	249.3	48.5
15	14.7	2.9	75	73.6	14.3	135	132.5	25.8	195	191.4	37.2	255	250.3	48.7
16	15.7	3.1	76	74.6	14.5	136	133.5	26.0	196	192.4	37.4	256	251.3	48.8
17	16.7	3.2	77	75.6	14.7	137	134.5	26.1	197	193.4	37.6	257	252.3	49.0
18	17.7	3.4	78	76.6	14.9	138	135.5	26.3	198	194.4	37.8	258	253.3	49.2
19	18.7	3.6	79	77.5	15.1	139	136.4	26.5	199	195.3	38.0	259	254.2	49.4
20	19.6	3.8	80	78.5	15.3	140	137.4	26.7	200	196.3	38.2	260	255.2	49.6
21	20.6	4.0	81	79.5	15.5	141	138.4	26.9	201	197.3	38.4	261	256.2	49.8
22	21.6	4.2	82	80.5	15.6	142	139.4	27.1	202	198.3	38.5	262	257.2	50.0
23	22.6	4.4	83	81.5	15.8	143	140.4	27.3	203	199.3	38.7	263	258.2	50.2
24	23.6	4.6	84	82.5	16.0	144	141.4	27.5	204	200.3	38.9	264	259.1	50.4
25	24.5	4.8	85	83.4	16.2	145	142.3	27.7	205	201.2	39.1	265	260.1	50.6
26	25.5	5.0	86	84.4	16.4	146	143.3	27.9	206	202.2	39.3	266	261.1	50.8
27	26.5	5.2	87	85.4	16.6	147	144.3	28.0	207	203.2	39.5	267	262.1	50.9
28	27.5	5.3	88	86.4	16.8	148	145.3	28.2	208	204.2	39.7	268	263.1	51.1
29	28.5	5.5	89	87.4	17.0	149	146.3	28.4	209	205.2	39.9	269	264.1	51.3
30	29.4	5.7	90	88.3	17.2	150	147.2	28.6	210	206.1	40.1	270	265.0	51.5
31	30.4	5.9	91	89.3	17.4	151	148.2	28.8	211	207.1	40.3	271	266.0	51.7
32	31.4	6.1	92	90.3	17.6	152	149.2	29.0	212	208.1	40.5	272	267.0	51.9
33	32.4	6.3	93	91.3	17.7	153	150.2	29.2	213	209.1	40.6	273	268.0	52.1
34	33.4	6.5	94	92.3	17.9	154	151.2	29.4	214	210.1	40.8	274	269.0	52.3
35	34.4	6.7	95	93.3	18.1	155	152.2	29.6	215	211.0	41.0	275	269.9	52.5
36	35.3	6.9	96	94.2	18.3	156	153.1	29.8	216	212.0	41.2	276	270.9	52.7
37	36.3	7.1	97	95.2	18.5	157	154.1	30.0	217	213.0	41.4	277	271.9	52.9
38	37.3	7.3	98	96.2	18.7	158	155.1	30.1	218	214.0	41.6	278	272.9	53.0
39	38.3	7.4	99	97.2	18.9	159	156.1	30.3	219	215.0	41.8	279	273.9	53.2
40	39.3	7.6	100	98.2	19.1	160	157.1	30.5	220	216.0	42.0	280	274.9	53.4
41	40.2	7.8	101	99.1	19.3	161	158.0	30.7	221	216.9	42.2	281	275.8	53.6
42	41.2	8.0	102	100.1	19.5	162	159.0	30.9	222	217.9	42.4	282	276.8	53.8
43	42.2	8.2	103	101.1	19.7	163	160.0	31.1	223	218.9	42.6	283	277.8	54.0
44	43.2	8.4	104	102.1	19.8	164	161.0	31.3	224	219.9	42.7	284	278.8	54.2
45	44.2	8.6	105	103.1	20.0	165	162.0	31.5	225	220.9	42.9	285	279.8	54.4
46	45.2	8.8	106	104.1	20.2	166	163.0	31.7	226	221.8	43.1	286	280.7	54.6
47	46.1	9.0	107	105.0	20.4	167	163.9	31.9	227	222.8	43.3	287	281.7	54.8
48	47.1	9.2	108	106.0	20.6	168	164.9	32.1	228	223.8	43.5	288	282.7	55.0
49	48.1	9.3	109	107.0	20.8	169	165.9	32.2	229	224.8	43.7	289	283.7	55.1
50	49.1	9.5	110	108.0	21.0	170	166.9	32.4	230	225.8	43.9	290	284.7	55.3
51	50.1	9.7	111	109.0	21.2	171	167.9	32.6	231	226.8	44.1	291	285.7	55.5
52	51.0	9.9	112	109.9	21.4	172	168.8	32.8	232	227.7	44.3	292	286.6	55.7
53	52.0	10.1	113	110.9	21.6	173	169.8	33.0	233	228.7	44.5	293	287.6	55.9
54	53.0	10.3	114	111.9	21.8	174	170.8	33.2	234	229.7	44.6	294	288.6	56.1
55	54.0	10.5	115	112.9	21.9	175	171.8	33.4	235	230.7	44.8	295	289.6	56.3
56	55.0	10.7	116	113.9	22.1	176	172.8	33.6	236	231.7	45.0	296	290.6	56.5
57	56.0	10.9	117	114.9	22.3	177	173.7	33.8	237	232.6	45.2	297	291.5	56.7
58	56.9	11.1	118	115.8	22.5	178	174.7	34.0	238	233.6	45.4	298	292.5	56.9
59	57.9	11.3	119	116.8	22.7	179	175.7	34.2	239	234.6	45.6	299	293.5	57.1
60	58.9	11.4	120	117.8	22.9	180	176.7	34.3	240	235.6	45.8	300	294.5	57.2
Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

12 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.2	61	59.7	12.7	121	118.4	25.2	181	177.0	37.6	241	235.7	50.1
2	2.0	0.4	62	60.6	12.9	122	119.3	25.4	182	178.0	37.8	242	236.7	50.3
3	2.9	0.6	63	61.6	13.1	123	120.3	25.6	183	179.0	38.0	243	237.7	50.5
4	3.9	0.8	64	62.6	13.3	124	121.3	25.8	184	180.0	38.3	244	238.7	50.7
5	4.9	1.0	65	63.6	13.5	125	122.3	26.0	185	181.0	38.5	245	239.6	50.9
6	5.9	1.2	66	64.6	13.7	126	123.2	26.2	186	181.9	38.7	246	240.6	51.1
7	6.8	1.5	67	65.5	13.9	127	124.2	26.4	187	182.9	38.9	247	241.6	51.4
8	7.8	1.7	68	66.5	14.1	128	125.2	26.6	188	183.9	39.1	248	242.6	51.6
9	8.8	1.9	69	67.5	14.3	129	126.2	26.8	189	184.9	39.3	249	243.6	51.8
10	9.8	2.1	70	68.5	14.6	130	127.2	27.0	190	185.8	39.5	250	244.6	52.0
11	10.8	2.3	71	69.4	14.8	131	128.1	27.2	191	186.8	39.7	251	245.5	52.2
12	11.7	2.5	72	70.4	15.0	132	129.1	27.4	192	187.8	39.9	252	246.5	52.4
13	12.7	2.7	73	71.4	15.2	133	130.1	27.7	193	188.8	40.1	253	247.5	52.6
14	13.7	2.9	74	72.4	15.4	134	131.1	27.9	194	189.8	40.3	254	248.4	52.8
15	14.7	3.1	75	73.4	15.6	135	132.0	28.1	195	190.7	40.5	255	249.4	53.0
16	15.7	3.3	76	74.3	15.8	136	133.0	28.3	196	191.7	40.8	256	250.4	53.2
17	16.6	3.5	77	75.3	16.0	137	134.0	28.5	197	192.7	41.0	257	251.4	53.4
18	17.6	3.7	78	76.3	16.2	138	135.0	28.7	198	193.7	41.2	258	252.4	53.6
19	18.6	4.0	79	77.3	16.4	139	136.0	28.9	199	194.7	41.4	259	253.3	53.8
20	19.6	4.2	80	78.3	16.6	140	136.9	29.1	200	195.6	41.6	260	254.3	54.1
21	20.5	4.4	81	79.2	16.8	141	137.9	29.3	201	196.6	41.8	261	255.3	54.3
22	21.5	4.6	82	80.2	17.0	142	138.9	29.5	202	197.6	42.0	262	256.3	54.5
23	22.5	4.8	83	81.2	17.3	143	139.9	29.7	203	198.6	42.2	263	257.3	54.7
24	23.5	5.0	84	82.2	17.5	144	140.9	29.9	204	199.5	42.4	264	258.2	54.9
25	24.5	5.1	85	83.1	17.7	145	141.8	30.1	205	200.5	42.6	265	259.2	55.1
26	25.4	5.4	86	84.1	17.9	146	142.8	30.4	206	201.5	42.8	266	260.2	55.3
27	26.4	5.6	87	85.1	18.1	147	143.8	30.6	207	202.5	43.0	267	261.2	55.5
28	27.4	5.8	88	86.1	18.3	148	144.8	30.8	208	203.5	43.2	268	262.1	55.7
29	28.4	6.0	89	87.1	18.5	149	145.7	31.0	209	204.4	43.5	269	263.1	55.9
30	29.3	6.2	90	88.0	18.7	150	146.7	31.2	210	205.4	43.7	270	264.1	56.1
31	30.3	6.4	91	89.0	18.9	151	147.7	31.4	211	206.4	43.9	271	265.1	56.3
32	31.3	6.7	92	90.0	19.1	152	148.7	31.6	212	207.4	44.1	272	266.1	56.6
33	32.3	6.9	93	91.0	19.3	153	149.7	31.8	213	208.3	44.3	273	267.0	56.8
34	33.3	7.1	94	91.9	19.5	154	150.6	32.0	214	209.3	44.5	274	268.0	57.0
35	34.2	7.3	95	92.9	19.8	155	151.6	32.2	215	210.3	44.7	275	269.0	57.2
36	35.2	7.5	96	93.9	20.0	156	152.6	32.4	216	211.3	44.9	276	270.0	57.4
37	36.2	7.7	97	94.9	20.2	157	153.6	32.6	217	212.3	45.1	277	270.9	57.6
38	37.2	7.9	98	95.9	20.4	158	154.5	32.9	218	213.2	45.3	278	271.9	57.8
39	38.1	8.1	99	96.8	20.6	159	155.5	33.1	219	214.2	45.5	279	272.9	58.0
40	39.1	8.3	100	97.8	20.8	160	156.5	33.3	220	215.2	45.7	280	273.9	58.2
41	40.1	8.5	101	98.8	21.0	161	157.5	33.5	221	216.2	45.9	281	274.9	58.4
42	41.1	8.7	102	99.8	21.2	162	158.5	33.7	222	217.1	46.2	282	275.8	58.6
43	42.1	8.9	103	100.7	21.4	163	159.4	33.9	223	218.1	46.4	283	276.8	58.8
44	43.0	9.1	104	101.7	21.6	164	160.4	34.1	224	219.1	46.6	284	277.8	59.0
45	44.0	9.4	105	102.7	21.8	165	161.4	34.3	225	220.1	46.8	285	278.8	59.3
46	45.0	9.6	106	103.7	22.0	166	162.4	34.5	226	221.1	47.0	286	279.8	59.5
47	46.0	9.8	107	104.7	22.2	167	163.4	34.7	227	222.0	47.2	287	280.7	59.7
48	47.0	10.0	108	105.7	22.5	168	164.3	34.9	228	223.0	47.4	288	281.7	59.9
49	47.9	10.2	109	106.6	22.7	169	165.3	35.1	229	224.0	47.6	289	282.7	60.1
50	48.9	10.4	110	107.6	22.9	170	166.3	35.3	230	225.0	47.8	290	283.7	60.3
51	49.9	10.6	111	108.6	23.1	171	167.3	35.6	231	226.0	48.0	291	284.6	60.5
52	50.9	10.8	112	109.6	23.3	172	168.2	35.8	232	226.9	48.2	292	285.6	60.7
53	51.8	11.0	113	110.5	23.5	173	169.2	36.0	233	227.9	48.4	293	286.6	60.9
54	52.8	11.2	114	111.5	23.7	174	170.2	36.2	234	228.9	48.7	294	287.6	61.1
55	53.8	11.4	115	112.5	23.9	175	171.2	36.4	235	229.9	48.9	295	288.6	61.3
56	54.8	11.6	116	113.5	24.1	176	172.2	36.6	236	230.8	49.1	296	289.5	61.5
57	55.8	11.9	117	114.4	24.3	177	173.1	36.8	237	231.8	49.3	297	290.5	61.7
58	56.7	12.1	118	115.4	24.5	178	174.1	37.0	238	232.8	49.5	298	291.5	62.0
59	57.7	12.3	119	116.4	24.7	179	175.1	37.2	239	233.8	49.7	299	292.5	62.2
60	58.7	12.5	120	117.4	24.9	180	176.1	37.4	240	234.8	49.9	300	293.4	62.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

78 Degrees.

TABLE XIII.

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TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

13 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	59.4	13.7	121	117.9	27.2	181	176.4	40.7	241	234.8	54.2
2	1.9	0.4	62	60.4	13.9	122	118.9	27.4	182	177.3	40.9	242	235.8	54.4
3	2.9	0.7	63	61.4	14.2	123	119.8	27.7	183	178.3	41.2	243	236.8	54.7
4	3.9	0.9	64	62.4	14.4	124	120.8	27.9	184	179.3	41.4	244	237.7	54.9
5	4.9	1.1	65	63.3	14.6	125	121.8	28.1	185	180.3	41.6	245	238.7	55.1
6	5.8	1.3	66	64.3	14.8	126	122.8	28.3	186	181.2	41.8	246	239.7	55.3
7	6.8	1.6	67	65.3	15.1	127	123.7	28.6	187	182.2	42.1	247	240.7	55.6
8	7.8	1.8	68	66.3	15.3	128	124.7	28.8	188	183.2	42.3	248	241.6	55.8
9	8.8	2.0	69	67.2	15.5	129	125.7	29.0	189	184.2	42.5	249	242.6	56.0
10	9.7	2.2	70	68.2	15.7	130	126.7	29.2	190	185.1	42.7	250	243.6	56.2
11	10.7	2.5	71	69.2	16.0	131	127.6	29.5	191	186.1	43.0	251	244.6	56.5
12	11.7	2.7	72	70.2	16.2	132	128.6	29.7	192	187.1	43.2	252	245.5	56.7
13	12.7	2.9	73	71.1	16.4	133	129.6	29.9	193	188.1	43.4	253	246.5	56.9
14	13.6	3.1	74	72.1	16.6	134	130.6	30.1	194	189.0	43.6	254	247.5	57.1
15	14.6	3.4	75	73.1	16.9	135	131.5	30.4	195	190.0	43.9	255	248.5	57.4
16	15.6	3.6	76	74.1	17.1	136	132.5	30.6	196	191.0	44.1	256	249.4	57.6
17	16.6	3.8	77	75.0	17.3	137	133.5	30.8	197	192.0	44.3	257	250.4	57.8
18	17.5	4.0	78	76.0	17.5	138	134.5	31.0	198	192.9	44.5	258	251.4	58.0
19	18.5	4.3	79	77.0	17.8	139	135.4	31.3	199	193.9	44.8	259	252.4	58.3
20	19.5	4.5	80	77.9	18.0	140	136.4	31.5	200	194.9	45.0	260	253.3	58.5
21	20.5	4.7	81	78.9	18.2	141	137.4	31.7	201	195.8	45.2	261	254.3	58.7
22	21.4	4.9	82	79.9	18.4	142	138.4	31.9	202	196.8	45.4	262	255.3	58.9
23	22.4	5.2	83	80.9	18.7	143	139.3	32.2	203	197.8	45.7	263	256.3	59.2
24	23.4	5.4	84	81.8	18.9	144	140.3	32.4	204	198.8	45.9	264	257.2	59.4
25	24.4	5.6	85	82.8	19.1	145	141.3	32.6	205	199.7	46.1	265	258.2	59.6
26	25.3	5.8	86	83.8	19.3	146	142.3	32.8	206	200.7	46.3	266	259.2	59.8
27	26.3	6.1	87	84.8	19.6	147	143.2	33.1	207	201.7	46.6	267	260.2	60.1
28	27.3	6.3	88	85.7	19.8	148	144.2	33.3	208	202.7	46.8	268	261.1	60.3
29	28.3	6.5	89	86.7	20.0	149	145.2	33.5	209	203.6	47.0	269	262.1	60.5
30	29.2	6.7	90	87.7	20.2	150	146.2	33.7	210	204.6	47.2	270	263.1	60.7
31	30.2	7.0	91	88.7	20.5	151	147.1	34.0	211	205.6	47.5	271	264.1	61.0
32	31.2	7.2	92	89.6	20.7	152	148.1	34.2	212	206.6	47.7	272	265.0	61.2
33	32.2	7.4	93	90.6	20.9	153	149.1	34.4	213	207.5	47.9	273	266.0	61.4
34	33.1	7.6	94	91.6	21.1	154	150.1	34.6	214	208.5	48.1	274	267.0	61.6
35	34.1	7.9	95	92.6	21.4	155	151.0	34.9	215	209.5	48.4	275	268.0	61.9
36	35.1	8.1	96	93.5	21.6	156	152.0	35.1	216	210.5	48.6	276	268.9	62.1
37	36.1	8.3	97	94.5	21.8	157	153.0	35.3	217	211.4	48.8	277	269.9	62.3
38	37.0	8.5	98	95.5	22.0	158	154.0	35.5	218	212.4	49.0	278	270.9	62.5
39	38.0	8.8	99	96.5	22.3	159	154.9	35.8	219	213.4	49.3	279	271.8	62.8
40	39.0	9.0	100	97.4	22.5	160	155.9	36.0	220	214.4	49.5	280	272.8	63.0
41	39.9	9.2	101	98.4	22.7	161	156.9	36.2	221	215.3	49.7	281	273.8	63.2
42	40.9	9.4	102	99.4	22.9	162	157.8	36.4	222	216.3	49.9	282	274.8	63.4
43	41.9	9.7	103	100.4	23.2	163	158.8	36.7	223	217.3	50.2	283	275.7	63.7
44	42.9	9.9	104	101.3	23.4	164	159.8	36.9	224	218.3	50.4	284	276.7	63.9
45	43.8	10.1	105	102.3	23.6	165	160.8	37.1	225	219.2	50.6	285	277.7	64.1
46	44.8	10.3	106	103.3	23.8	166	161.7	37.3	226	220.2	50.8	286	278.7	64.3
47	45.8	10.6	107	104.3	24.1	167	162.7	37.6	227	221.2	51.1	287	279.6	64.6
48	46.8	10.8	108	105.2	24.3	168	163.7	37.8	228	222.2	51.3	288	280.6	64.8
49	47.7	11.0	109	106.2	24.5	169	164.7	38.0	229	223.1	51.5	289	281.6	65.0
50	48.7	11.2	110	107.2	24.7	170	165.6	38.2	230	224.1	51.7	290	282.6	65.2
51	49.7	11.5	111	108.2	25.0	171	166.6	38.5	231	225.1	52.0	291	283.5	65.5
52	50.7	11.7	112	109.1	25.2	172	167.6	38.7	232	226.1	52.2	292	284.5	65.7
53	51.6	11.9	113	110.1	25.4	173	168.6	38.9	233	227.0	52.4	293	285.5	65.9
54	52.6	12.1	114	111.1	25.6	174	169.5	39.1	234	228.0	52.6	294	286.5	66.1
55	53.6	12.4	115	112.1	25.9	175	170.5	39.4	235	229.0	52.9	295	287.4	66.4
56	54.6	12.6	116	113.0	26.1	176	171.5	39.6	236	230.0	53.1	296	288.4	66.6
57	55.5	12.8	117	114.0	26.3	177	172.5	39.8	237	230.9	53.3	297	289.4	66.8
58	56.5	13.0	118	115.0	26.5	178	173.4	40.0	238	231.9	53.5	298	290.4	67.0
59	57.5	13.3	119	116.0	26.8	179	174.4	40.3	239	232.9	53.8	299	291.3	67.3
60	58.5	13.5	120	116.9	27.0	180	175.4	40.5	240	233.8	54.0	300	292.3	67.5
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

77 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

14 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	59.2	14.8	121	117.4	29.3	181	175.6	43.8	241	233.8	58.3
2	1.9	0.5	62	60.2	15.0	122	118.4	29.5	182	176.6	44.0	242	234.8	58.5
3	2.9	0.7	63	61.1	15.2	123	119.3	29.8	183	177.6	44.3	243	235.8	58.8
4	3.9	1.0	64	62.1	15.5	124	120.3	30.0	184	178.5	44.5	244	236.8	59.0
5	4.9	1.2	65	63.1	15.7	125	121.3	30.2	185	179.5	44.8	245	237.7	59.3
6	5.8	1.5	66	64.0	16.0	126	122.3	30.5	186	180.5	45.0	246	238.7	59.5
7	6.8	1.7	67	65.0	16.2	127	123.2	30.7	187	181.4	45.2	247	239.7	59.8
8	7.8	1.9	68	66.0	16.5	128	124.2	31.0	188	182.4	45.5	248	240.6	60.0
9	8.7	2.2	69	67.0	16.7	129	125.2	31.2	189	183.4	45.7	249	241.6	60.2
10	9.7	2.4	70	67.9	16.9	130	126.1	31.4	190	184.4	46.0	250	242.6	60.5
11	10.7	2.7	71	68.9	17.2	131	127.1	31.7	191	185.3	46.2	251	243.5	60.7
12	11.6	2.9	72	69.9	17.4	132	128.1	31.9	192	186.3	46.4	252	244.5	61.0
13	12.6	3.1	73	70.8	17.7	133	129.0	32.2	193	187.3	46.7	253	245.5	61.2
14	13.6	3.4	74	71.8	17.9	134	130.0	32.4	194	188.2	46.9	254	246.5	61.4
15	14.6	3.6	75	72.7	18.1	135	131.0	32.7	195	189.2	47.2	255	247.4	61.7
16	15.5	3.9	76	73.7	18.4	136	132.0	32.9	196	190.2	47.4	256	248.4	61.9
17	16.5	4.1	77	74.7	18.6	137	132.9	33.1	197	191.1	47.7	257	249.4	62.2
18	17.5	4.4	78	75.7	18.9	138	133.9	33.4	198	192.1	47.9	258	250.3	62.4
19	18.4	4.6	79	76.7	19.1	139	134.9	33.6	199	193.1	48.1	259	251.3	62.7
20	19.4	4.8	80	77.6	19.4	140	135.8	33.9	200	194.1	48.4	260	252.3	62.9
21	20.4	5.1	81	78.6	19.6	141	136.8	34.1	201	195.0	48.6	261	253.2	63.1
22	21.3	5.3	82	79.6	19.8	142	137.8	34.4	202	196.0	48.9	262	254.2	63.4
23	22.3	5.6	83	80.5	20.1	143	138.8	34.6	203	197.0	49.1	263	255.2	63.6
24	23.3	5.8	84	81.5	20.3	144	139.7	34.8	204	197.9	49.4	264	256.2	63.9
25	24.3	6.0	85	82.5	20.6	145	140.7	35.1	205	198.9	49.6	265	257.1	64.1
26	25.2	6.3	86	83.4	20.8	146	141.7	35.3	206	199.9	49.8	266	258.1	64.4
27	26.2	6.5	87	84.4	21.0	147	142.6	35.6	207	200.9	50.1	267	259.1	64.6
28	27.2	6.8	88	85.4	21.3	148	143.6	35.8	208	201.8	50.3	268	260.0	64.8
29	28.1	7.0	89	86.4	21.5	149	144.6	36.0	209	202.8	50.6	269	261.0	65.1
30	29.1	7.3	90	87.3	21.8	150	145.5	36.3	210	203.8	50.8	270	262.0	65.3
31	30.1	7.5	91	88.3	22.0	151	146.5	36.5	211	204.7	51.0	271	263.0	65.6
32	31.0	7.7	92	89.3	22.3	152	147.5	36.8	212	205.7	51.3	272	263.9	65.8
33	32.0	8.0	93	90.2	22.5	153	148.5	37.0	213	206.7	51.5	273	264.9	66.0
34	33.0	8.2	94	91.2	22.7	154	149.4	37.3	214	207.6	51.8	274	265.9	66.3
35	34.0	8.5	95	92.2	23.0	155	150.4	37.5	215	208.6	52.0	275	266.8	66.5
36	34.9	8.7	96	93.1	23.2	156	151.4	37.7	216	209.6	52.3	276	267.8	66.8
37	35.9	9.0	97	94.1	23.5	157	152.3	38.0	217	210.6	52.5	277	268.8	67.0
38	36.9	9.2	98	95.1	23.7	158	153.3	38.2	218	211.5	52.7	278	269.7	67.3
39	37.8	9.4	99	96.1	24.0	159	154.3	38.5	219	212.5	53.0	279	270.7	67.5
40	38.8	9.7	100	97.0	24.2	160	155.2	38.7	220	213.5	53.2	280	271.7	67.7
41	39.8	9.9	101	98.0	24.4	161	156.2	38.9	221	214.4	53.5	281	272.7	68.0
42	40.8	10.2	102	99.0	24.7	162	157.2	39.2	222	215.4	53.7	282	273.6	68.2
43	41.7	10.4	103	99.9	24.9	163	158.2	39.4	223	216.4	53.9	283	274.6	68.5
44	42.7	10.6	104	100.9	25.2	164	159.1	39.7	224	217.3	54.2	284	275.6	68.7
45	43.7	10.9	105	101.9	25.5	165	160.1	39.9	225	218.3	54.4	285	276.5	68.9
46	44.6	11.1	106	102.9	25.6	166	161.1	40.2	226	219.3	54.7	286	277.5	69.2
47	45.6	11.4	107	103.8	25.9	167	162.0	40.4	227	220.3	54.9	287	278.5	69.4
48	46.6	11.6	108	104.8	26.1	168	163.0	40.6	228	221.2	55.2	288	279.4	69.7
49	47.5	11.9	109	105.8	26.4	169	164.0	40.9	229	222.2	55.4	289	280.4	69.9
50	48.5	12.1	110	106.7	26.6	170	165.0	41.1	230	223.2	55.6	290	281.4	70.2
51	49.5	12.3	111	107.7	26.9	171	165.9	41.4	231	224.1	55.9	291	282.4	70.4
52	50.5	12.6	112	108.7	27.1	172	166.9	41.6	232	225.1	56.1	292	283.3	70.6
53	51.4	12.8	113	109.6	27.3	173	167.9	41.9	233	226.1	56.4	293	284.3	70.9
54	52.4	13.1	114	110.6	27.6	174	168.8	42.1	234	227.0	56.6	294	285.3	71.1
55	53.4	13.3	115	111.6	27.8	175	169.8	42.3	235	228.0	56.9	295	286.2	71.4
56	54.3	13.5	116	112.6	28.1	176	170.8	42.6	236	229.0	57.1	296	287.2	71.6
57	55.3	13.8	117	113.5	28.3	177	171.7	42.8	237	230.0	57.3	297	288.2	71.9
58	56.3	14.0	118	114.5	28.5	178	172.7	43.1	238	230.9	57.6	298	289.1	72.1
59	57.2	14.3	119	115.5	28.8	179	173.7	43.3	239	231.9	57.8	299	290.1	72.3
60	58.2	14.5	120	116.4	29.0	180	174.7	43.5	240	232.9	58.1	300	291.1	72.6
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

76 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

109

15 Degrees.

Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.	Dist.	D. Lat.	Dep.
1	1.0	0.3	61	58.9	15.8	121	116.9	31.3	181	174.8	46.8	241	232.8	62.4
2	1.9	0.5	62	59.9	16.0	122	117.8	31.6	182	175.8	47.1	242	233.8	62.6
3	2.9	0.8	63	60.9	16.3	123	118.8	31.8	183	176.8	47.4	243	234.7	62.9
4	3.9	1.0	64	61.8	16.6	124	119.8	32.1	184	177.7	47.6	244	235.7	63.2
5	4.8	1.3	65	62.8	16.8	125	120.7	32.4	185	178.7	47.9	245	236.7	63.4
6	5.8	1.6	66	63.8	17.1	126	121.7	32.6	186	179.7	48.1	246	237.6	63.7
7	6.8	1.8	67	64.7	17.3	127	122.7	32.9	187	180.6	48.4	247	238.6	63.9
8	7.7	2.1	68	65.7	17.6	128	123.6	33.1	188	181.6	48.7	248	239.5	64.2
9	8.7	2.3	69	66.6	17.9	129	124.6	33.4	189	182.6	48.9	249	240.5	64.4
10	9.7	2.6	70	67.6	18.1	130	125.6	33.6	190	183.5	49.2	250	241.5	64.7
11	10.6	2.8	71	68.6	18.4	131	126.5	33.9	191	184.5	49.4	251	242.4	65.0
12	11.6	3.1	72	69.5	18.6	132	127.5	34.2	192	185.5	49.7	252	243.4	65.2
13	12.6	3.4	73	70.5	18.9	133	128.5	34.4	193	186.4	50.0	253	244.4	65.5
14	13.5	3.6	74	71.5	19.2	134	129.4	34.7	194	187.4	50.2	254	245.3	65.7
15	14.5	3.9	75	72.4	19.4	135	130.4	34.9	195	188.4	50.5	255	246.3	66.0
16	15.5	4.1	76	73.4	19.7	136	131.4	35.2	196	189.3	50.7	256	247.3	66.3
17	16.4	4.4	77	74.4	19.9	137	132.3	35.5	197	190.3	51.0	257	248.2	66.5
18	17.4	4.7	78	75.3	20.2	138	133.3	35.7	198	191.3	51.2	258	249.2	66.8
19	18.4	4.9	79	76.3	20.4	139	134.3	36.0	199	192.2	51.5	259	250.2	67.0
20	19.3	5.2	80	77.3	20.7	140	135.2	36.2	200	193.2	51.8	260	251.1	67.3
21	20.3	5.4	81	78.2	21.0	141	136.2	36.5	201	194.2	52.0	261	252.1	67.6
22	21.3	5.7	82	79.2	21.2	142	137.2	36.8	202	195.1	52.3	262	253.1	67.8
23	22.2	6.0	83	80.2	21.5	143	138.1	37.0	203	196.1	52.5	263	254.0	68.1
24	23.2	6.2	84	81.1	21.7	144	139.1	37.3	204	197.0	52.8	264	255.0	68.3
25	24.1	6.5	85	82.1	22.0	145	140.1	37.5	205	198.0	53.1	265	256.0	68.6
26	25.1	6.7	86	83.1	22.3	146	141.0	37.8	206	199.0	53.3	266	256.9	68.8
27	26.1	7.0	87	84.0	22.5	147	142.0	38.0	207	199.9	53.6	267	257.9	69.1
28	27.0	7.2	88	85.0	22.8	148	143.0	38.3	208	200.9	53.8	268	258.9	69.4
29	28.0	7.5	89	86.0	23.0	149	143.9	38.6	209	201.9	54.1	269	259.8	69.6
30	29.0	7.8	90	86.9	23.3	150	144.9	38.8	210	202.8	54.4	270	260.8	69.9
31	29.9	8.0	91	87.9	23.6	151	145.9	39.1	211	203.8	54.6	271	261.8	70.1
32	30.9	8.3	92	88.9	23.8	152	146.8	39.3	212	204.8	54.9	272	262.7	70.4
33	31.9	8.5	93	89.8	24.1	153	147.8	39.6	213	205.7	55.1	273	263.7	70.7
34	32.8	8.8	94	90.8	24.3	154	148.8	39.9	214	206.7	55.4	274	264.7	70.9
35	33.8	9.1	95	91.8	24.6	155	149.7	40.1	215	207.7	55.6	275	265.6	71.2
36	34.8	9.3	96	92.7	24.8	156	150.7	40.4	216	208.6	55.9	276	266.6	71.4
37	35.7	9.6	97	93.7	25.1	157	151.7	40.6	217	209.6	56.2	277	267.6	71.7
38	36.7	9.8	98	94.7	25.4	158	152.6	40.9	218	210.6	56.4	278	268.5	72.0
39	37.7	10.1	99	95.6	25.6	159	153.6	41.2	219	211.5	56.7	279	269.5	72.2
40	38.6	10.4	100	96.6	25.9	160	154.5	41.4	220	212.5	56.9	280	270.5	72.5
41	39.6	10.6	101	97.6	26.1	161	155.5	41.7	221	213.5	57.2	281	271.4	72.7
42	40.6	10.9	102	98.5	26.4	162	156.5	41.9	222	214.4	57.5	282	272.4	73.0
43	41.5	11.1	103	99.5	26.7	163	157.4	42.2	223	215.4	57.7	283	273.4	73.2
44	42.5	11.4	104	100.5	26.9	164	158.4	42.4	224	216.4	58.0	284	274.3	73.5
45	43.5	11.6	105	101.4	27.2	165	159.4	42.7	225	217.3	58.2	285	275.3	73.8
46	44.4	11.9	106	102.4	27.4	166	160.3	43.0	226	218.3	58.5	286	276.3	74.0
47	45.4	12.2	107	103.4	27.7	167	161.3	43.2	227	219.3	58.8	287	277.2	74.3
48	46.4	12.4	108	104.3	28.0	168	162.3	43.5	228	220.2	59.0	288	278.2	74.5
49	47.3	12.7	109	105.3	28.2	169	163.2	43.7	229	221.2	59.3	289	279.2	74.8
50	48.3	12.9	110	106.3	28.5	170	164.2	44.0	230	222.2	59.5	290	280.1	75.1
51	49.3	13.2	111	107.2	28.7	171	165.2	44.3	231	223.1	59.8	291	281.1	75.3
52	50.2	13.5	112	108.2	29.0	172	166.1	44.5	232	224.1	60.0	292	282.1	75.6
53	51.2	13.7	113	109.1	29.2	173	167.1	44.8	233	225.1	60.3	293	283.0	75.8
54	52.2	14.0	114	110.1	29.5	174	168.1	45.0	234	226.0	60.6	294	284.0	76.1
55	53.1	14.2	115	111.1	29.8	175	169.0	45.3	235	227.0	60.8	295	284.9	76.4
56	54.1	14.5	116	112.0	30.0	176	170.0	45.6	236	228.0	61.1	296	285.9	76.6
57	55.1	14.8	117	113.0	30.3	177	171.0	45.8	237	228.9	61.3	297	286.9	76.9
58	56.0	15.0	118	114.0	30.5	178	171.9	46.1	238	229.9	61.6	298	287.8	77.1
59	57.0	15.3	119	114.9	30.8	179	172.9	46.3	239	230.9	61.9	299	288.8	77.4
60	58.0	15.5	120	115.9	31.1	180	173.9	46.6	240	231.8	62.1	300	289.8	77.6
Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.	Dist.	Dep.	D. Lat.

75 Degrees.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

16 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.3	61	58.6	16.8	121	116.3	33.4	181	174.0	49.9
2	1.9	0.6	62	59.6	17.1	122	117.3	33.6	182	174.9	50.2
3	2.9	0.8	63	60.6	17.4	123	118.2	33.9	183	175.9	50.4
4	3.8	1.1	64	61.5	17.6	124	119.2	34.2	184	176.9	50.7
5	4.8	1.4	65	62.5	17.9	125	120.2	34.5	185	177.8	51.0
6	5.8	1.7	66	63.4	18.2	126	121.1	34.7	186	178.8	51.3
7	6.7	1.9	67	64.4	18.5	127	122.1	35.0	187	179.8	51.5
8	7.7	2.2	68	65.4	18.7	128	123.0	35.3	188	180.7	51.8
9	8.7	2.5	69	66.3	19.0	129	124.0	35.6	189	181.7	52.1
10	9.6	2.8	70	67.3	19.3	130	125.0	35.8	190	182.6	52.4
11	10.6	3.0	71	68.2	19.6	131	125.9	36.1	191	183.6	52.6
12	11.5	3.3	72	69.2	19.8	132	126.9	36.4	192	184.6	52.9
13	12.5	3.6	73	70.2	20.1	133	127.8	36.7	193	185.5	53.2
14	13.5	3.9	74	71.1	20.4	134	128.8	36.9	194	186.5	53.5
15	14.4	4.1	75	72.1	20.7	135	129.8	37.2	195	187.4	53.7
16	15.4	4.4	76	73.1	20.9	136	130.7	37.5	196	188.4	54.0
17	16.3	4.7	77	74.0	21.2	137	131.7	37.8	197	189.4	54.3
18	17.3	5.0	78	75.0	21.5	138	132.7	38.0	198	190.3	54.6
19	18.3	5.2	79	75.9	21.8	139	133.6	38.3	199	191.3	54.9
20	19.2	5.5	80	76.9	22.1	140	134.6	38.6	200	192.3	55.1
21	20.2	5.8	81	77.9	22.3	141	135.5	38.9	201	193.2	55.4
22	21.1	6.1	82	78.8	22.6	142	136.5	39.1	202	194.2	55.7
23	22.1	6.3	83	79.8	22.9	143	137.5	39.4	203	195.1	56.0
24	23.1	6.6	84	80.7	23.2	144	138.4	39.7	204	196.1	56.2
25	24.0	6.9	85	81.7	23.4	145	139.4	40.0	205	197.1	56.5
26	25.0	7.2	86	82.7	23.7	146	140.3	40.2	206	198.0	56.8
27	26.0	7.4	87	83.6	24.0	147	141.3	40.5	207	199.0	57.1
28	26.9	7.7	88	84.6	24.3	148	142.3	40.8	208	199.9	57.3
29	27.9	8.0	89	85.6	24.5	149	143.2	41.1	209	200.9	57.6
30	28.8	8.3	90	86.5	24.8	150	144.2	41.3	210	201.9	57.9
31	29.8	8.5	91	87.5	25.1	151	145.2	41.6	211	202.8	58.2
32	30.8	8.8	92	88.4	25.4	152	146.1	41.9	212	203.8	58.4
33	31.7	9.1	93	89.4	25.6	153	147.1	42.2	213	204.7	58.7
34	32.7	9.4	94	90.4	25.9	154	148.0	42.4	214	205.7	59.0
35	33.6	9.6	95	91.3	26.2	155	149.0	42.7	215	206.7	59.3
36	34.6	9.9	96	92.3	26.5	156	150.0	43.0	216	207.6	59.5
37	35.6	10.2	97	93.2	26.7	157	150.9	43.3	217	208.6	59.8
38	36.5	10.5	98	94.2	27.0	158	151.9	43.6	218	209.6	60.1
39	37.5	10.7	99	95.2	27.3	159	152.8	43.8	219	210.5	60.4
40	38.5	11.0	100	96.1	27.6	160	153.8	44.1	220	211.5	60.6
41	39.4	11.3	101	97.1	27.8	161	154.8	44.4	221	212.4	60.9
42	40.4	11.6	102	98.0	28.1	162	155.7	44.7	222	213.4	61.2
43	41.3	11.9	103	99.0	28.4	163	156.7	44.9	223	214.4	61.5
44	42.3	12.1	104	100.0	28.7	164	157.6	45.2	224	215.3	61.7
45	43.3	12.4	105	100.9	28.9	165	158.6	45.5	225	216.3	62.0
46	44.2	12.7	106	101.9	29.2	166	159.6	45.8	226	217.2	62.3
47	45.2	13.0	107	102.9	29.5	167	160.5	46.0	227	218.2	62.6
48	46.1	13.2	108	103.8	29.8	168	161.5	46.3	228	219.2	62.8
49	47.1	13.5	109	104.8	30.0	169	162.5	46.6	229	220.1	63.1
50	48.1	13.8	110	105.7	30.3	170	163.4	46.9	230	221.1	63.4
51	49.0	14.1	111	106.7	30.6	171	164.4	47.1	231	222.1	63.7
52	50.0	14.3	112	107.7	30.9	172	165.3	47.4	232	223.0	63.9
53	50.9	14.6	113	108.6	31.1	173	166.3	47.7	233	224.0	64.2
54	51.9	14.9	114	109.6	31.4	174	167.3	48.0	234	224.9	64.5
55	52.9	15.2	115	110.5	31.7	175	168.2	48.2	235	225.9	64.8
56	53.8	15.4	116	111.5	32.0	176	169.2	48.5	236	226.9	65.1
57	54.8	15.7	117	112.5	32.2	177	170.1	48.8	237	227.8	65.3
58	55.8	16.0	118	113.4	32.5	178	171.1	49.1	238	228.8	65.6
59	56.7	16.3	119	114.4	32.8	179	172.1	49.3	239	229.7	65.9
60	57.7	16.5	120	115.4	33.1	180	173.0	49.6	240	230.7	66.2
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

111

17 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.3	61	58.3	17.8	121	115.7	35.4	181	173.1	52.9	241	230.5	70.5
2	1.9	0.6	62	59.3	18.1	122	116.7	35.7	182	174.0	53.2	242	231.4	70.8
3	2.9	0.9	63	60.2	18.4	123	117.6	36.0	183	175.0	53.5	243	232.4	71.0
4	3.8	1.2	64	61.2	18.7	124	118.6	36.3	184	176.0	53.8	244	233.3	71.3
5	4.8	1.5	65	62.2	19.0	125	119.5	36.5	185	176.9	54.1	245	234.3	71.6
6	5.7	1.8	66	63.1	19.3	126	120.5	36.8	186	177.9	54.4	246	235.2	71.9
7	6.7	2.0	67	64.1	19.6	127	121.5	37.1	187	178.8	54.7	247	236.2	72.2
8	7.7	2.3	68	65.0	19.9	128	122.4	37.4	188	179.8	55.0	248	237.2	72.5
9	8.6	2.6	69	66.0	20.2	129	123.4	37.7	189	180.7	55.3	249	238.1	72.8
10	9.6	2.9	70	66.9	20.5	130	124.3	38.0	190	181.7	55.6	250	239.1	73.1
11	10.5	3.2	71	67.9	20.8	131	125.3	38.3	191	182.7	55.8	251	240.0	73.4
12	11.5	3.5	72	68.9	21.1	132	126.2	38.6	192	183.6	56.1	252	241.0	73.7
13	12.4	3.8	73	69.8	21.3	133	127.2	38.9	193	184.6	56.4	253	241.9	74.0
14	13.4	4.1	74	70.8	21.6	134	128.1	39.2	194	185.5	56.7	254	242.9	74.3
15	14.3	4.4	75	71.7	21.9	135	129.1	39.5	195	186.5	57.0	255	243.9	74.6
16	15.3	4.7	76	72.7	22.2	136	130.1	39.8	196	187.4	57.3	256	244.8	74.8
17	16.3	5.0	77	73.6	22.5	137	131.0	40.1	197	188.4	57.6	257	245.8	75.1
18	17.2	5.3	78	74.6	22.8	138	132.0	40.3	198	189.3	57.9	258	246.7	75.4
19	18.2	5.6	79	75.5	23.1	139	132.9	40.6	199	190.3	58.2	259	247.7	75.7
20	19.1	5.8	80	76.5	23.4	140	133.9	40.9	200	191.3	58.5	260	248.6	76.0
21	20.1	6.1	81	77.5	23.7	141	134.8	41.2	201	192.2	58.8	261	249.6	76.3
22	21.0	6.4	82	78.4	24.0	142	135.8	41.5	202	193.2	59.1	262	250.6	76.6
23	22.0	6.7	83	79.4	24.3	143	136.8	41.8	203	194.1	59.4	263	251.5	76.9
24	23.0	7.0	84	80.3	24.6	144	137.7	42.1	204	195.1	59.6	264	252.5	77.2
25	23.9	7.3	85	81.3	24.9	145	138.7	42.4	205	196.0	59.9	265	253.4	77.5
26	24.9	7.6	86	82.2	25.1	146	139.6	42.7	206	197.0	60.2	266	254.4	77.8
27	25.8	7.9	87	83.2	25.4	147	140.6	43.0	207	198.0	60.5	267	255.3	78.1
28	26.8	8.2	88	84.2	25.7	148	141.5	43.3	208	198.9	60.8	268	256.3	78.4
29	27.7	8.5	89	85.1	26.0	149	142.5	43.6	209	199.9	61.1	269	257.2	78.6
30	28.7	8.8	90	86.1	26.3	150	143.4	43.9	210	200.8	61.4	270	258.2	78.9
31	29.6	9.1	91	87.0	26.6	151	144.4	44.1	211	201.8	61.7	271	259.2	79.2
32	30.6	9.4	92	88.0	26.9	152	145.4	44.4	212	202.7	62.0	272	260.1	79.5
33	31.6	9.6	93	88.9	27.2	153	146.3	44.7	213	203.7	62.3	273	261.1	79.8
34	32.5	9.9	94	89.9	27.5	154	147.3	45.0	214	204.6	62.6	274	262.0	80.1
35	33.5	10.2	95	90.8	27.8	155	148.2	45.3	215	205.6	62.9	275	263.0	80.4
36	34.4	10.5	96	91.8	28.1	156	149.2	45.6	216	206.6	63.2	276	263.9	80.7
37	35.4	10.8	97	92.8	28.4	157	150.1	45.9	217	207.5	63.4	277	264.9	81.0
38	36.3	11.1	98	93.7	28.7	158	151.1	46.2	218	208.5	63.7	278	265.9	81.3
39	37.3	11.4	99	94.7	28.9	159	152.1	46.5	219	209.4	64.0	279	266.8	81.6
40	38.3	11.7	100	95.6	29.2	160	153.0	46.8	220	210.4	64.3	280	267.8	81.9
41	39.2	12.0	101	96.6	29.5	161	154.0	47.1	221	211.3	64.6	281	268.7	82.2
42	40.2	12.3	102	97.5	29.8	162	154.9	47.4	222	212.3	64.9	282	269.7	82.4
43	41.1	12.6	103	98.5	30.1	163	155.9	47.7	223	213.3	65.2	283	270.6	82.7
44	42.1	12.9	104	99.5	30.4	164	156.8	47.9	224	214.2	65.5	284	271.6	83.0
45	43.0	13.2	105	100.4	30.7	165	157.8	48.2	225	215.2	65.8	285	272.5	83.3
46	44.0	13.4	106	101.4	31.0	166	158.7	48.5	226	216.1	66.1	286	273.5	83.6
47	44.9	13.7	107	102.3	31.3	167	159.7	48.8	227	217.1	66.4	287	274.5	83.9
48	45.9	14.0	108	103.3	31.6	168	160.7	49.1	228	218.0	66.7	288	275.4	84.2
49	46.9	14.3	109	104.2	31.9	169	161.6	49.4	229	219.0	67.0	289	276.4	84.5
50	47.8	14.6	110	105.2	32.2	170	162.6	49.7	230	220.0	67.2	290	277.3	84.8
51	48.8	14.9	111	106.1	32.5	171	163.5	50.0	231	220.9	67.5	291	278.3	85.1
52	49.7	15.2	112	107.1	32.7	172	164.5	50.3	232	221.9	67.8	292	279.2	85.4
53	50.7	15.5	113	108.1	33.0	173	165.4	50.6	233	222.8	68.1	293	280.2	85.7
54	51.6	15.8	114	109.0	33.3	174	166.4	50.9	234	223.8	68.4	294	281.2	86.0
55	52.6	16.1	115	110.0	33.6	175	167.4	51.2	235	224.7	68.7	295	282.1	86.2
56	53.6	16.4	116	110.9	33.9	176	168.3	51.5	236	225.7	69.0	296	283.1	86.5
57	54.5	16.7	117	111.9	34.2	177	169.3	51.7	237	226.6	69.3	297	284.0	86.8
58	55.5	17.0	118	112.8	34.5	178	170.2	52.0	238	227.6	69.6	298	285.0	87.1
59	56.4	17.3	119	113.8	34.8	179	171.2	52.3	239	228.5	69.9	299	285.9	87.4
60	57.4	17.5	120	114.8	35.1	180	172.1	52.6	240	229.5	70.2	300	286.9	87.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

18 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.3	61	58.0	18.9	121	115.1	37.4	181	172.1	55.9	241	229.2	74.5
2	1.1	0.6	62	59.0	19.2	122	116.0	37.7	182	173.1	56.2	242	230.2	74.8
3	2.9	0.9	63	59.9	19.5	123	117.0	38.0	183	174.0	56.6	243	231.1	75.1
4	3.8	1.2	64	60.9	19.8	124	117.9	38.3	184	175.0	56.9	244	232.1	75.4
5	4.8	1.5	65	61.8	20.1	125	118.9	38.6	185	175.9	57.2	245	233.0	75.7
6	5.7	1.9	66	62.8	20.4	126	119.8	38.9	186	176.9	57.5	246	234.0	76.0
7	6.7	2.2	67	63.7	20.7	127	120.8	39.2	187	177.8	57.8	247	234.9	76.3
8	7.6	2.5	68	64.7	21.0	128	121.7	39.6	188	178.8	58.1	248	235.9	76.6
9	8.6	2.8	69	65.6	21.3	129	122.7	39.9	189	179.7	58.4	249	236.8	76.9
10	9.5	3.1	70	66.6	21.6	130	123.6	40.2	190	180.7	58.7	250	237.8	77.3
11	10.5	3.4	71	67.5	21.9	131	124.6	40.5	191	181.7	59.0	251	238.7	77.6
12	11.4	3.7	72	68.5	22.2	132	125.5	40.8	192	182.6	59.3	252	239.7	77.9
13	12.4	4.0	73	69.4	22.6	133	126.5	41.1	193	183.6	59.6	253	240.6	78.2
14	13.3	4.3	74	70.4	22.9	134	127.4	41.4	194	184.5	59.9	254	241.6	78.5
15	14.3	4.6	75	71.3	23.2	135	128.4	41.7	195	185.5	60.3	255	242.5	78.8
16	15.2	4.9	76	72.3	23.5	136	129.3	42.0	196	186.4	60.6	256	243.5	79.1
17	16.2	5.3	77	73.2	23.8	137	130.3	42.3	197	187.4	60.9	257	244.4	79.4
18	17.1	5.6	78	74.2	24.1	138	131.2	42.6	198	188.3	61.2	258	245.4	79.7
19	18.1	5.9	79	75.1	24.4	139	132.2	43.0	199	189.3	61.5	259	246.3	80.0
20	19.0	6.2	80	76.1	24.7	140	133.1	43.3	200	190.2	61.8	260	247.3	80.3
21	20.0	6.5	81	77.0	25.0	141	134.1	43.6	201	191.2	62.1	261	248.2	80.7
22	20.9	6.8	82	78.0	25.3	142	135.1	43.9	202	192.1	62.4	262	249.2	81.0
23	21.9	7.1	83	78.9	25.6	143	136.0	44.2	203	193.1	62.7	263	250.1	81.3
24	22.8	7.4	84	79.9	26.0	144	137.0	44.5	204	194.0	63.0	264	251.1	81.6
25	23.8	7.7	85	80.8	26.3	145	137.9	44.8	205	195.0	63.3	265	252.0	81.9
26	24.7	8.0	86	81.8	26.6	146	138.9	45.1	206	195.9	63.7	266	253.0	82.2
27	25.7	8.3	87	82.7	26.9	147	139.8	45.4	207	196.9	64.0	267	253.9	82.5
28	26.6	8.7	88	83.7	27.2	148	140.8	45.7	208	197.8	64.3	268	254.9	82.8
29	27.6	9.0	89	84.6	27.5	149	141.7	46.0	209	198.8	64.6	269	255.8	83.1
30	28.5	9.3	90	85.6	27.8	150	142.7	46.4	210	199.7	64.9	270	256.8	83.4
31	29.5	9.6	91	86.5	28.1	151	143.6	46.7	211	200.7	65.2	271	257.7	83.7
32	30.4	9.9	92	87.5	28.4	152	144.6	47.0	212	201.6	65.5	272	258.7	84.1
33	31.4	10.2	93	88.4	28.7	153	145.5	47.3	213	202.6	65.8	273	259.6	84.4
34	32.3	10.5	94	89.4	29.0	154	146.5	47.6	214	203.5	66.1	274	260.6	84.7
35	33.3	10.8	95	90.4	29.4	155	147.4	47.9	215	204.5	66.4	275	261.5	85.0
36	34.2	11.1	96	91.3	29.7	156	148.4	48.2	216	205.4	66.7	276	262.5	85.3
37	35.2	11.4	97	92.3	30.0	157	149.3	48.5	217	206.4	67.1	277	263.4	85.6
38	36.1	11.7	98	93.2	30.3	158	150.3	48.8	218	207.3	67.4	278	264.4	85.9
39	37.1	12.1	99	94.2	30.6	159	151.2	49.1	219	208.3	67.7	279	265.3	86.2
40	38.0	12.4	100	95.1	30.9	160	152.2	49.4	220	209.2	68.0	280	266.3	86.5
41	39.0	12.7	101	96.1	31.2	161	153.1	49.8	221	210.2	68.3	281	267.2	86.8
42	39.9	13.0	102	97.0	31.5	162	154.1	50.1	222	211.1	68.6	282	268.2	87.1
43	40.9	13.3	103	98.0	31.8	163	155.0	50.4	223	212.1	68.9	283	269.1	87.5
44	41.8	13.6	104	98.9	32.1	164	156.0	50.7	224	213.0	69.2	284	270.1	87.8
45	42.8	13.9	105	99.9	32.4	165	156.9	51.0	225	214.0	69.5	285	271.1	88.1
46	43.7	14.2	106	100.8	32.8	166	157.9	51.3	226	214.9	69.8	286	272.0	88.4
47	44.7	14.5	107	101.8	33.1	167	158.8	51.6	227	215.9	70.1	287	273.0	88.7
48	45.7	14.8	108	102.7	33.4	168	159.8	51.9	228	216.8	70.5	288	273.9	89.0
49	46.6	15.1	109	103.7	33.7	169	160.7	52.2	229	217.8	70.8	289	274.9	89.3
50	47.6	15.5	110	104.6	34.0	170	161.7	52.5	230	218.7	71.1	290	275.8	89.6
51	48.5	15.8	111	105.6	34.3	171	162.6	52.8	231	219.7	71.4	291	276.8	89.9
52	49.5	16.1	112	106.5	34.6	172	163.6	53.2	232	220.6	71.7	292	277.7	90.2
53	50.4	16.4	113	107.5	34.9	173	164.5	53.5	233	221.6	72.0	293	278.7	90.5
54	51.4	16.7	114	108.4	35.2	174	165.5	53.8	234	222.5	72.3	294	279.6	90.9
55	52.3	17.0	115	109.4	35.5	175	166.4	54.1	235	223.5	72.6	295	280.6	91.2
56	53.3	17.3	116	110.3	35.8	176	167.4	54.4	236	224.4	72.9	296	281.5	91.5
57	54.2	17.6	117	111.3	36.2	177	168.3	54.7	237	225.4	73.2	297	282.5	91.8
58	55.2	17.9	118	112.2	36.5	178	169.3	55.0	238	226.4	73.5	298	283.4	92.1
59	56.1	18.2	119	113.2	36.8	179	170.2	55.3	239	227.3	73.9	299	284.4	92.4
60	57.1	18.5	120	114.1	37.1	180	171.2	55.6	240	228.3	74.2	300	285.3	92.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

72 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

113

19 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.3	61	57.7	19.9	121	114.4	39.4	181	171.1	58.9	241	227.9	78.5
2	1.9	0.7	62	58.6	20.2	122	115.4	39.7	182	172.1	59.5	242	228.8	78.8
3	2.8	1.0	63	59.6	20.5	123	116.3	40.0	183	173.0	59.6	243	229.8	79.1
4	3.8	1.3	64	60.5	20.8	124	117.2	40.4	184	174.0	59.9	244	230.7	79.4
5	4.7	1.6	65	61.5	21.2	125	118.2	40.7	185	174.9	60.2	245	231.7	79.8
6	5.7	2.0	66	62.4	21.5	126	119.1	41.0	186	175.9	60.6	246	232.6	80.1
7	6.6	2.3	67	63.3	21.8	127	120.1	41.3	187	176.8	60.9	247	233.5	80.4
8	7.6	2.6	68	64.3	22.1	128	121.0	41.7	188	177.8	61.2	248	234.5	80.7
9	8.5	2.9	69	65.2	22.5	129	122.0	42.0	189	178.7	61.5	249	235.4	81.1
10	9.5	3.3	70	66.2	22.8	130	122.9	42.3	190	179.6	61.9	250	236.4	81.4
11	10.4	3.6	71	67.1	23.1	131	123.9	42.6	191	180.6	62.2	251	237.3	81.7
12	11.3	3.9	72	68.1	23.4	132	124.8	43.0	192	181.5	62.5	252	238.3	82.0
13	12.3	4.2	73	69.0	23.8	133	125.8	43.3	193	182.5	62.8	253	239.2	82.4
14	13.2	4.6	74	70.0	24.1	134	126.7	43.6	194	183.4	63.2	254	240.2	82.7
15	14.2	4.9	75	70.9	24.4	135	127.6	44.0	195	184.4	63.5	255	241.1	83.0
16	15.1	5.2	76	71.9	24.7	136	128.6	44.3	196	185.3	63.8	256	242.1	83.3
17	16.1	5.5	77	72.8	25.1	137	129.5	44.6	197	186.3	64.1	257	243.0	83.7
18	17.0	5.9	78	73.8	25.4	138	130.5	44.9	198	187.2	64.5	258	243.9	84.0
19	18.0	6.2	79	74.7	25.7	139	131.4	45.3	199	188.2	64.8	259	244.9	84.3
20	18.9	6.5	80	75.6	26.0	140	132.4	45.6	200	189.1	65.1	260	245.8	84.6
21	19.9	6.8	81	76.6	26.4	141	133.3	45.9	201	190.0	65.4	261	246.8	85.0
22	20.8	7.2	82	77.5	26.7	142	134.3	46.2	202	191.0	65.8	262	247.7	85.3
23	21.7	7.5	83	78.5	27.0	143	135.2	46.6	203	191.9	66.1	263	248.7	85.6
24	22.7	7.8	84	79.4	27.3	144	136.2	46.9	204	192.9	66.4	264	249.6	86.0
25	23.6	8.1	85	80.4	27.7	145	137.1	47.2	205	193.8	66.7	265	250.6	86.3
26	24.6	8.5	86	81.3	28.0	146	138.0	47.5	206	194.8	67.1	266	251.5	86.6
27	25.5	8.8	87	82.3	28.3	147	139.0	47.9	207	195.7	67.4	267	252.5	86.9
28	26.5	9.1	88	83.2	28.7	148	139.9	48.2	208	196.7	67.7	268	253.4	87.3
29	27.4	9.4	89	84.2	29.0	149	140.9	48.5	209	197.6	68.0	269	254.3	87.6
30	28.4	9.8	90	85.1	29.3	150	141.8	48.8	210	198.6	68.4	270	255.3	87.9
31	29.3	10.1	91	86.0	29.6	151	142.8	49.2	211	199.5	68.7	271	256.2	88.2
32	30.3	10.4	92	87.0	30.0	152	143.7	49.5	212	200.4	69.0	272	257.2	88.6
33	31.2	10.7	93	87.9	30.3	153	144.7	49.8	213	201.4	69.3	273	258.1	88.9
34	32.1	11.1	94	88.9	30.6	154	145.6	50.1	214	202.3	69.7	274	259.1	89.2
35	33.1	11.4	95	89.8	30.9	155	146.6	50.5	215	203.3	70.0	275	260.0	89.5
36	34.0	11.7	96	90.8	31.3	156	147.5	50.8	216	204.2	70.3	276	261.0	89.9
37	35.0	12.0	97	91.7	31.6	157	148.4	51.1	217	205.2	70.6	277	261.9	90.2
38	35.9	12.4	98	92.7	31.9	158	149.4	51.4	218	206.1	71.0	278	262.9	90.5
39	36.9	12.7	99	93.6	32.2	159	150.3	51.8	219	207.1	71.3	279	263.8	90.8
40	37.8	13.0	100	94.6	32.6	160	151.3	52.1	220	208.0	71.6	280	264.7	91.2
41	38.8	13.3	101	95.5	32.9	161	152.2	52.4	221	209.0	72.0	281	265.7	91.5
42	39.7	13.7	102	96.4	33.2	162	153.2	52.7	222	209.9	72.3	282	266.6	91.8
43	40.7	14.0	103	97.4	33.5	163	154.1	53.1	223	210.9	72.6	283	267.6	92.1
44	41.6	14.3	104	98.3	33.9	164	155.1	53.4	224	211.8	72.9	284	268.5	92.5
45	42.5	14.7	105	99.3	34.2	165	156.0	53.7	225	212.7	73.3	285	269.5	92.8
46	43.5	15.0	106	100.2	34.5	166	157.0	54.0	226	213.7	73.6	286	270.4	93.1
47	44.4	15.3	107	101.2	34.8	167	157.9	54.4	227	214.6	73.9	287	271.4	93.4
48	45.4	15.6	108	102.1	35.2	168	158.8	54.7	228	215.6	74.2	288	272.3	93.8
49	46.3	16.0	109	103.1	35.5	169	159.8	55.0	229	216.5	74.6	289	273.3	94.1
50	47.3	16.3	110	104.0	35.8	170	160.7	55.3	230	217.5	74.9	290	274.2	94.4
51	48.2	16.6	111	105.0	36.1	171	161.7	55.7	231	218.4	75.2	291	275.1	94.7
52	49.2	16.9	112	105.9	36.5	172	162.6	56.0	232	219.4	75.5	292	276.1	95.1
53	50.1	17.3	113	106.8	36.8	173	163.6	56.3	233	220.3	75.9	293	277.0	95.4
54	51.1	17.6	114	107.8	37.1	174	164.5	56.6	234	221.3	76.2	294	278.0	95.7
55	52.0	17.9	115	108.7	37.4	175	165.5	57.0	235	222.2	76.5	295	278.9	96.0
56	52.9	18.2	116	109.7	37.8	176	166.4	57.3	236	223.1	76.8	296	279.9	96.4
57	53.9	18.6	117	110.6	38.1	177	167.4	57.6	237	224.1	77.2	297	280.8	96.7
58	54.8	18.9	118	111.6	38.4	178	168.3	58.0	238	225.0	77.5	298	281.8	97.0
59	55.8	19.2	119	112.5	38.7	179	169.2	58.3	239	226.0	77.8	299	282.7	97.3
60	56.7	19.5	120	113.5	39.1	180	170.2	58.6	240	226.9	78.1	300	283.7	97.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

71 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

12 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.2	61	59.7	12.7	121	118.4	25.2	181	177.0	37.6
2	2.0	0.4	62	60.6	12.9	122	119.3	25.4	182	178.0	37.8
3	2.9	0.6	63	61.6	13.1	123	120.3	25.6	183	179.0	38.0
4	3.9	0.8	64	62.6	13.3	124	121.3	25.8	184	180.0	38.3
5	4.9	1.0	65	63.6	13.5	125	122.3	26.0	185	181.0	38.5
6	5.9	1.2	66	64.6	13.7	126	123.2	26.2	186	181.9	38.7
7	6.8	1.5	67	65.5	13.9	127	124.2	26.4	187	182.9	38.9
8	7.8	1.7	68	66.5	14.1	128	125.2	26.6	188	183.9	39.1
9	8.8	1.9	69	67.5	14.3	129	126.2	26.8	189	184.9	39.3
10	9.8	2.1	70	68.5	14.6	130	127.2	27.0	190	185.8	39.5
11	10.8	2.3	71	69.4	14.8	131	128.1	27.2	191	186.8	39.7
12	11.7	2.5	72	70.4	15.0	132	129.1	27.4	192	187.8	39.9
13	12.7	2.7	73	71.4	15.2	133	130.1	27.7	193	188.8	40.1
14	13.7	2.9	74	72.4	15.4	134	131.1	27.9	194	189.8	40.3
15	14.7	3.1	75	73.4	15.6	135	132.0	28.1	195	190.7	40.5
16	15.7	3.3	76	74.3	15.8	136	133.0	28.3	196	191.7	40.8
17	16.6	3.5	77	75.3	16.0	137	134.0	28.5	197	192.7	41.0
18	17.6	3.7	78	76.3	16.2	138	135.0	28.7	198	193.7	41.2
19	18.6	4.0	79	77.3	16.4	139	136.0	28.9	199	194.7	41.4
20	19.6	4.2	80	78.3	16.6	140	136.9	29.1	200	195.6	41.6
21	20.5	4.4	81	79.2	16.8	141	137.9	29.3	201	196.6	41.8
22	21.5	4.6	82	80.2	17.0	142	138.9	29.5	202	197.6	42.0
23	22.5	4.8	83	81.2	17.3	143	139.9	29.7	203	198.6	42.2
24	23.5	5.0	84	82.2	17.5	144	140.9	29.9	204	199.5	42.4
25	24.5	5.1	85	83.1	17.7	145	141.8	30.1	205	200.5	42.6
26	25.4	5.4	86	84.1	17.9	146	142.8	30.4	206	201.5	42.8
27	26.4	5.6	87	85.1	18.1	147	143.8	30.6	207	202.5	43.0
28	27.4	5.8	88	86.1	18.3	148	144.8	30.8	208	203.5	43.2
29	28.4	6.0	89	87.1	18.5	149	145.7	31.0	209	204.4	43.5
30	29.3	6.2	90	88.0	18.7	150	146.7	31.2	210	205.4	43.7
31	30.3	6.4	91	89.0	18.9	151	147.7	31.4	211	206.4	43.9
32	31.3	6.7	92	90.0	19.1	152	148.7	31.6	212	207.4	44.1
33	32.3	6.9	93	91.0	19.3	153	149.7	31.8	213	208.3	44.3
34	33.3	7.1	94	91.9	19.5	154	150.6	32.0	214	209.3	44.5
35	34.2	7.3	95	92.9	19.8	155	151.6	32.2	215	210.3	44.7
36	35.2	7.5	96	93.9	20.0	156	152.6	32.4	216	211.3	44.9
37	36.2	7.7	97	94.9	20.2	157	153.6	32.6	217	212.3	45.1
38	37.2	7.9	98	95.9	20.4	158	154.5	32.9	218	213.2	45.3
39	38.1	8.1	99	96.8	20.6	159	155.5	33.1	219	214.2	45.5
40	39.1	8.3	100	97.8	20.8	160	156.5	33.3	220	215.2	45.7
41	40.1	8.5	101	98.8	21.0	161	157.5	33.5	221	216.2	45.9
42	41.1	8.7	102	99.8	21.2	162	158.5	33.7	222	217.1	46.2
43	42.1	8.9	103	100.7	21.4	163	159.4	33.9	223	218.1	46.4
44	43.0	9.1	104	101.7	21.6	164	160.4	34.1	224	219.1	46.6
45	44.0	9.4	105	102.7	21.8	165	161.4	34.3	225	220.1	46.8
46	45.0	9.6	106	103.7	22.0	166	162.4	34.5	226	221.1	47.0
47	46.0	9.8	107	104.7	22.2	167	163.4	34.7	227	222.0	47.2
48	47.0	10.0	108	105.7	22.5	168	164.8	34.9	228	223.0	47.4
49	47.9	10.2	109	106.6	22.7	169	165.3	35.1	229	224.0	47.6
50	48.9	10.4	110	107.6	22.9	170	166.3	35.3	230	225.0	47.8
51	49.9	10.6	111	108.6	23.1	171	167.3	35.6	231	226.0	48.0
52	50.9	10.8	112	109.6	23.3	172	168.2	35.8	232	226.9	48.2
53	51.8	11.0	113	110.5	23.5	173	169.2	36.0	233	227.9	48.4
54	52.8	11.2	114	111.5	23.7	174	170.2	36.2	234	228.9	48.7
55	53.8	11.4	115	112.5	23.9	175	171.2	36.4	235	229.9	48.9
56	54.8	11.6	116	113.5	24.1	176	172.2	36.6	236	230.8	49.1
57	55.8	11.9	117	114.4	24.3	177	173.1	36.8	237	231.8	49.3
58	56.7	12.1	118	115.4	24.5	178	174.1	37.0	238	232.8	49.5
59	57.7	12.3	119	116.4	24.7	179	175.1	37.2	239	233.8	49.7
60	58.7	12.5	120	117.4	24.9	180	176.1	37.4	240	234.8	49.9
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TABLE XIII.

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TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

13 Degrees.											
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	59.4	13.7	121	117.9	27.2	181	176.4	40.7
2	1.9	0.4	62	60.4	13.9	122	118.9	27.4	182	177.3	40.9
3	2.9	0.7	63	61.4	14.2	123	119.8	27.7	183	178.3	41.2
4	3.9	0.9	64	62.4	14.4	124	120.8	27.9	184	179.3	41.4
5	4.9	1.1	65	63.3	14.6	125	121.8	28.1	185	180.3	41.6
6	5.8	1.3	66	64.3	14.8	126	122.8	28.3	186	181.2	41.8
7	6.8	1.6	67	65.3	15.1	127	123.7	28.6	187	182.2	42.1
8	7.8	1.8	68	66.3	15.3	128	124.7	28.8	188	183.2	42.3
9	8.8	2.0	69	67.2	15.5	129	125.7	29.0	189	184.2	42.5
10	9.7	2.2	70	68.2	15.7	130	126.7	29.2	190	185.1	42.7
11	10.7	2.5	71	69.2	16.0	131	127.6	29.5	191	186.1	43.0
12	11.7	2.7	72	70.2	16.2	132	128.6	29.7	192	187.1	43.2
13	12.7	2.9	73	71.1	16.4	133	129.6	29.9	193	188.1	43.4
14	13.6	3.1	74	72.1	16.6	134	130.6	30.1	194	189.0	43.6
15	14.6	3.4	75	73.1	16.9	135	131.5	30.4	195	190.0	43.9
16	15.6	3.6	76	74.1	17.1	136	132.5	30.6	196	191.0	44.1
17	16.6	3.8	77	75.0	17.3	137	133.5	30.8	197	192.0	44.3
18	17.5	4.0	78	76.0	17.5	138	134.5	31.0	198	192.9	44.5
19	18.5	4.3	79	77.0	17.8	139	135.4	31.3	199	193.9	44.8
20	19.5	4.5	80	77.9	18.0	140	136.4	31.5	200	194.9	45.0
21	20.5	4.7	81	78.9	18.2	141	137.4	31.7	201	195.8	45.2
22	21.4	4.9	82	79.9	18.4	142	138.4	31.9	202	196.8	45.4
23	22.4	5.2	83	80.9	18.7	143	139.3	32.2	203	197.8	45.7
24	23.4	5.4	84	81.8	18.9	144	140.3	32.4	204	198.8	45.9
25	24.4	5.6	85	82.8	19.1	145	141.3	32.6	205	199.7	46.1
26	25.3	5.8	86	83.8	19.3	146	142.3	32.8	206	200.7	46.3
27	26.3	6.1	87	84.8	19.6	147	143.2	33.1	207	201.7	46.6
28	27.3	6.3	88	85.7	19.8	148	144.2	33.3	208	202.7	46.8
29	28.3	6.5	89	86.7	20.0	149	145.2	33.5	209	203.6	47.0
30	29.2	6.7	90	87.7	20.2	150	146.2	33.7	210	204.6	47.2
31	30.2	7.0	91	88.7	20.5	151	147.1	34.0	211	205.6	47.5
32	31.2	7.2	92	89.6	20.7	152	148.1	34.2	212	206.6	47.7
33	32.2	7.4	93	90.6	20.9	153	149.1	34.4	213	207.5	47.9
34	33.1	7.6	94	91.6	21.1	154	150.1	34.6	214	208.5	48.1
35	34.1	7.9	95	92.6	21.4	155	151.0	34.9	215	209.5	48.4
36	35.1	8.1	96	93.5	21.6	156	152.0	35.1	216	210.5	48.6
37	36.1	8.3	97	94.5	21.8	157	153.0	35.3	217	211.4	48.8
38	37.0	8.5	98	95.5	22.0	158	154.0	35.5	218	212.4	49.0
39	38.0	8.8	99	96.5	22.3	159	154.9	35.8	219	213.4	49.3
40	39.0	9.0	100	97.4	22.5	160	155.9	36.0	220	214.4	49.5
41	39.9	9.2	101	98.4	22.7	161	156.9	36.2	221	215.3	49.7
42	40.9	9.4	102	99.4	22.9	162	157.8	36.4	222	216.3	49.9
43	41.9	9.7	103	100.4	23.2	163	158.8	36.7	223	217.3	50.2
44	42.9	9.9	104	101.3	23.4	164	159.8	36.9	224	218.3	50.4
45	43.8	10.1	105	102.3	23.6	165	160.8	37.1	225	219.2	50.6
46	44.8	10.3	106	103.3	23.8	166	161.7	37.3	226	220.2	50.8
47	45.8	10.6	107	104.3	24.1	167	162.7	37.6	227	221.2	51.1
48	46.8	10.8	108	105.2	24.3	168	163.7	37.8	228	222.2	51.3
49	47.7	11.0	109	106.2	24.5	169	164.7	38.0	229	223.1	51.5
50	48.7	11.2	110	107.2	24.7	170	165.6	38.2	230	224.1	51.7
51	49.7	11.5	111	108.2	25.0	171	166.6	38.5	231	225.1	52.0
52	50.7	11.7	112	109.1	25.2	172	167.6	38.7	232	226.1	52.2
53	51.6	11.9	113	110.1	25.4	173	168.6	38.9	233	227.0	52.4
54	52.6	12.1	114	111.1	25.6	174	169.5	39.1	234	228.0	52.6
55	53.6	12.4	115	112.1	25.9	175	170.5	39.4	235	229.0	52.9
56	54.6	12.6	116	113.0	26.1	176	171.5	39.6	236	230.0	53.1
57	55.5	12.8	117	114.0	26.3	177	172.5	39.8	237	230.9	53.3
58	56.5	13.0	118	115.0	26.5	178	173.4	40.0	238	231.9	53.5
59	57.5	13.3	119	116.0	26.8	179	174.4	40.3	239	232.9	53.8
60	58.5	13.5	120	116.9	27.0	180	175.4	40.5	240	233.8	54.0
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

77 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

14 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.2	61	59.2	14.8	121	117.4	29.3	181	175.6	43.8	241	233.8	58.3
2	1.9	0.5	62	60.2	15.0	122	118.4	29.5	182	176.6	44.0	242	234.8	58.5
3	2.9	0.7	63	61.1	15.2	123	119.3	29.8	183	177.6	44.3	243	235.8	58.8
4	3.9	1.0	64	62.1	15.5	124	120.3	30.0	184	178.5	44.5	244	236.8	59.0
5	4.9	1.2	65	63.1	15.7	125	121.3	30.2	185	179.5	44.8	245	237.7	59.3
6	5.8	1.5	66	64.0	16.0	126	122.3	30.5	186	180.5	45.0	246	238.7	59.5
7	6.8	1.7	67	65.0	16.2	127	123.2	30.7	187	181.4	45.2	247	239.7	59.8
8	7.8	1.9	68	66.0	16.5	128	124.2	31.0	188	182.4	45.5	248	240.6	60.0
9	8.7	2.2	69	67.0	16.7	129	125.2	31.2	189	183.4	45.7	249	241.6	60.2
10	9.7	2.4	70	67.9	16.9	130	126.1	31.4	190	184.4	46.0	250	242.6	60.5
11	10.7	2.7	71	68.9	17.2	131	127.1	31.7	191	185.3	46.2	251	243.5	60.7
12	11.6	2.9	72	69.9	17.4	132	128.1	31.9	192	186.3	46.4	252	244.5	61.0
13	12.6	3.1	73	70.8	17.7	133	129.0	32.2	193	187.3	46.7	253	245.5	61.2
14	13.6	3.4	74	71.8	17.9	134	130.0	32.4	194	188.2	46.9	254	246.5	61.4
15	14.6	3.6	75	72.7	18.1	135	131.0	32.7	195	189.2	47.2	255	247.4	61.7
16	15.5	3.9	76	73.7	18.4	136	132.0	32.9	196	190.2	47.4	256	248.4	61.9
17	16.5	4.1	77	74.7	18.6	137	132.9	33.1	197	191.1	47.7	257	249.4	62.2
18	17.5	4.4	78	75.7	18.9	138	133.9	33.4	198	192.1	47.9	258	250.3	62.4
19	18.4	4.6	79	76.7	19.1	139	134.9	33.6	199	193.1	48.1	259	251.3	62.7
20	19.4	4.8	80	77.6	19.4	140	135.8	33.9	200	194.1	48.4	260	252.3	62.9
21	20.4	5.1	81	78.6	19.6	141	136.8	34.1	201	195.0	48.6	261	253.2	63.1
22	21.3	5.3	82	79.6	19.8	142	137.8	34.4	202	196.0	48.9	262	254.2	63.4
23	22.3	5.6	83	80.5	20.1	143	138.8	34.6	203	197.0	49.1	263	255.2	63.6
24	23.3	5.8	84	81.5	20.3	144	139.7	34.8	204	197.9	49.4	264	256.2	63.9
25	24.3	6.0	85	82.5	20.6	145	140.7	35.1	205	198.9	49.6	265	257.1	64.1
26	25.2	6.3	86	83.4	20.8	146	141.7	35.3	206	199.9	49.8	266	258.1	64.4
27	26.2	6.5	87	84.4	21.0	147	142.6	35.6	207	200.9	50.1	267	259.1	64.6
28	27.2	6.8	88	85.4	21.3	148	143.6	35.8	208	201.8	50.3	268	260.0	64.8
29	28.1	7.0	89	86.4	21.5	149	144.6	36.0	209	202.8	50.6	269	261.0	65.1
30	29.1	7.3	90	87.3	21.8	150	145.5	36.3	210	203.8	50.8	270	262.0	65.3
31	30.1	7.5	91	88.3	22.0	151	146.5	36.5	211	204.7	51.0	271	263.0	65.6
32	31.0	7.7	92	89.3	22.3	152	147.5	36.8	212	205.7	51.3	272	263.9	65.8
33	32.0	8.0	93	90.2	22.5	153	148.5	37.0	213	206.7	51.5	273	264.9	66.0
34	33.0	8.2	94	91.2	22.7	154	149.4	37.3	214	207.6	51.8	274	265.9	66.3
35	34.0	8.5	95	92.2	23.0	155	150.4	37.5	215	208.6	52.0	275	266.8	66.5
36	34.9	8.7	96	93.1	23.2	156	151.4	37.7	216	209.6	52.3	276	267.8	66.8
37	35.9	9.0	97	94.1	23.5	157	152.3	38.0	217	210.6	52.5	277	268.8	67.0
38	36.9	9.2	98	95.1	23.7	158	153.3	38.2	218	211.5	52.7	278	269.7	67.3
39	37.8	9.4	99	96.1	24.0	159	154.3	38.5	219	212.5	53.0	279	270.7	67.5
40	38.8	9.7	100	97.0	24.2	160	155.2	38.7	220	213.5	53.2	280	271.7	67.7
41	39.8	9.9	101	98.0	24.4	161	156.2	38.9	221	214.4	53.5	281	272.7	68.0
42	40.8	10.2	102	99.0	24.7	162	157.2	39.2	222	215.4	53.7	282	273.6	68.2
43	41.7	10.4	103	99.9	24.9	163	158.2	39.4	223	216.4	53.9	283	274.6	68.5
44	42.7	10.6	104	100.9	25.2	164	159.1	39.7	224	217.3	54.2	284	275.6	68.7
45	43.7	10.9	105	101.9	25.5	165	160.1	39.9	225	218.3	54.4	285	276.5	68.9
46	44.6	11.1	106	102.9	25.6	166	161.1	40.2	226	219.3	54.7	286	277.5	69.2
47	45.6	11.4	107	103.8	25.9	167	162.0	40.4	227	220.3	54.9	287	278.5	69.4
48	46.6	11.6	108	104.8	26.1	168	163.0	40.6	228	221.2	55.2	288	279.4	69.7
49	47.5	11.9	109	105.8	26.4	169	164.0	40.9	229	222.2	55.4	289	280.4	69.9
50	48.5	12.1	110	106.7	26.6	170	165.0	41.1	230	223.2	55.6	290	281.4	70.2
51	49.5	12.3	111	107.7	26.9	171	165.9	41.4	231	224.1	55.9	291	282.4	70.4
52	50.5	12.6	112	108.7	27.1	172	166.9	41.6	232	225.1	56.1	292	283.3	70.6
53	51.4	12.8	113	109.6	27.3	173	167.9	41.9	233	226.1	56.4	293	284.3	70.9
54	52.4	13.1	114	110.6	27.6	174	168.8	42.1	234	227.0	56.6	294	285.3	71.1
55	53.4	13.3	115	111.6	27.8	175	169.8	42.3	235	228.0	56.9	295	286.2	71.4
56	54.3	13.5	116	112.6	28.1	176	170.8	42.6	236	229.0	57.1	296	287.2	71.6
57	55.3	13.8	117	113.5	28.3	177	171.7	42.8	237	230.0	57.3	297	288.2	71.9
58	56.3	14.0	118	114.5	28.5	178	172.7	43.1	238	230.9	57.6	298	289.1	72.1
59	57.2	14.3	119	115.5	28.8	179	173.7	43.3	239	231.9	57.8	299	290.1	72.3
60	58.2	14.5	120	116.4	29.0	180	174.7	43.5	240	232.9	58.1	300	291.1	72.6
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

76 Degrees.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

15 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.3	61	58.9	15.8	121	116.9	31.3	181	174.8	46.8
2	1.9	0.5	62	59.9	16.0	122	117.8	31.6	182	175.8	47.1
3	2.9	0.8	63	60.9	16.3	123	118.8	31.8	183	176.8	47.4
4	3.9	1.0	64	61.8	16.6	124	119.8	32.1	184	177.7	47.6
5	4.8	1.3	65	62.8	16.8	125	120.7	32.4	185	178.7	47.9
6	5.8	1.6	66	63.8	17.1	126	121.7	32.6	186	179.7	48.1
7	6.8	1.8	67	64.7	17.3	127	122.7	32.9	187	180.6	48.4
8	7.7	2.1	68	65.7	17.6	128	123.6	33.1	188	181.6	48.7
9	8.7	2.3	69	66.6	17.9	129	124.6	33.4	189	182.6	48.9
10	9.7	2.6	70	67.6	18.1	130	125.6	33.6	190	183.5	49.2
11	10.6	2.8	71	68.6	18.4	131	126.5	33.9	191	184.5	49.4
12	11.6	3.1	72	69.5	18.6	132	127.5	34.2	192	185.5	49.7
13	12.6	3.4	73	70.5	18.9	133	128.5	34.4	193	186.4	50.0
14	13.5	3.6	74	71.5	19.2	134	129.4	34.7	194	187.4	50.2
15	14.5	3.9	75	72.4	19.4	135	130.4	34.9	195	188.4	50.5
16	15.5	4.1	76	73.4	19.7	136	131.4	35.2	196	189.3	50.7
17	16.4	4.4	77	74.4	19.9	137	132.3	35.5	197	190.3	51.0
18	17.4	4.7	78	75.3	20.2	138	133.3	35.7	198	191.3	51.2
19	18.4	4.9	79	76.3	20.4	139	134.3	36.0	199	192.2	51.5
20	19.3	5.2	80	77.3	20.7	140	135.2	36.2	200	193.2	51.8
21	20.3	5.4	81	78.2	21.0	141	136.2	36.5	201	194.2	52.0
22	21.3	5.7	82	79.2	21.2	142	137.2	36.8	202	195.1	52.3
23	22.2	6.0	83	80.2	21.5	143	138.1	37.0	203	196.1	52.5
24	23.2	6.2	84	81.1	21.7	144	139.1	37.3	204	197.0	52.8
25	24.1	6.5	85	82.1	22.0	145	140.1	37.5	205	198.0	53.1
26	25.1	6.7	86	83.1	22.3	146	141.0	37.8	206	199.0	53.3
27	26.1	7.0	87	84.0	22.5	147	142.0	38.0	207	199.9	53.6
28	27.0	7.2	88	85.0	22.8	148	143.0	38.3	208	200.9	53.8
29	28.0	7.5	89	86.0	23.0	149	143.9	38.6	209	201.9	54.1
30	29.0	7.8	90	86.9	23.3	150	144.9	38.8	210	202.8	54.4
31	29.9	8.0	91	87.9	23.6	151	145.9	39.1	211	203.8	54.6
32	30.9	8.3	92	88.9	23.8	152	146.8	39.3	212	204.8	54.9
33	31.9	8.5	93	89.8	24.1	153	147.8	39.6	213	205.7	55.1
34	32.8	8.8	94	90.8	24.3	154	148.8	39.9	214	206.7	55.4
35	33.8	9.1	95	91.8	24.6	155	149.7	40.1	215	207.7	55.6
36	34.8	9.3	96	92.7	24.8	156	150.7	40.4	216	208.6	55.9
37	35.7	9.6	97	93.7	25.1	157	151.7	40.6	217	209.6	56.2
38	36.7	9.8	98	94.7	25.4	158	152.6	40.9	218	210.6	56.4
39	37.7	10.1	99	95.6	25.6	159	153.6	41.2	219	211.5	56.7
40	38.6	10.4	100	96.6	25.9	160	154.5	41.4	220	212.5	56.9
41	39.6	10.6	101	97.6	26.1	161	155.5	41.7	221	213.5	57.2
42	40.6	10.9	102	98.5	26.4	162	156.5	41.9	222	214.4	57.5
43	41.5	11.1	103	99.5	26.7	163	157.4	42.2	223	215.4	57.7
44	42.5	11.4	104	100.5	26.9	164	158.4	42.4	224	216.4	58.0
45	43.5	11.6	105	101.4	27.2	165	159.4	42.7	225	217.3	58.2
46	44.4	11.9	106	102.4	27.4	166	160.3	43.0	226	218.3	58.5
47	45.4	12.2	107	103.4	27.7	167	161.3	43.2	227	219.3	58.8
48	46.4	12.4	108	104.3	28.0	168	162.3	43.5	228	220.2	59.0
49	47.3	12.7	109	105.3	28.2	169	163.2	43.7	229	221.2	59.3
50	48.3	12.9	110	106.3	28.5	170	164.2	44.0	230	222.2	59.5
51	49.3	13.2	111	107.2	28.7	171	165.2	44.3	231	223.1	59.8
52	50.2	13.5	112	108.2	29.0	172	166.1	44.5	232	224.1	60.0
53	51.2	13.7	113	109.1	29.2	173	167.1	44.8	233	225.1	60.3
54	52.2	14.0	114	110.1	29.5	174	168.1	45.0	234	226.0	60.6
55	53.1	14.2	115	111.1	29.8	175	169.0	45.3	235	227.0	60.8
56	54.1	14.5	116	112.0	30.0	176	170.0	45.6	236	228.0	61.1
57	55.1	14.8	117	113.0	30.3	177	171.0	45.8	237	228.9	61.3
58	56.0	15.0	118	114.0	30.5	178	171.9	46.1	238	229.9	61.6
59	57.0	15.3	119	114.9	30.8	179	172.9	46.3	239	230.9	61.9
60	58.0	15.5	120	115.9	31.1	180	173.9	46.6	240	231.8	62.1
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

16 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	1.0	0.3	61	58.6	16.8	121	116.3	38.4	181	174.0	49.9	241	231.7	66.4	301	289.4	82.7
2	1.9	0.6	62	59.6	17.1	122	117.3	38.6	182	174.9	50.2	242	232.6	66.7	302	290.5	83.0
3	2.9	0.8	63	60.6	17.4	123	118.2	38.9	183	175.9	50.4	243	233.6	67.0	303	291.6	83.3
4	3.8	1.1	64	61.5	17.6	124	119.2	34.2	184	176.9	50.7	244	234.5	67.3	304	292.7	83.6
5	4.8	1.4	65	62.5	17.9	125	120.2	34.5	185	177.8	51.0	245	235.5	67.5	305	293.8	83.9
6	5.8	1.7	66	63.4	18.2	126	121.1	34.7	186	178.8	51.3	246	236.5	67.8	306	294.9	84.2
7	6.7	1.9	67	64.4	18.5	127	122.1	35.0	187	179.8	51.5	247	237.4	68.1	307	296.0	84.5
8	7.7	2.2	68	65.4	18.7	128	123.0	35.3	188	180.7	51.8	248	238.4	68.4	308	297.1	84.8
9	8.7	2.5	69	66.3	19.0	129	124.0	35.6	189	181.7	52.1	249	239.4	68.6	309	298.2	85.1
10	9.6	2.8	70	67.3	19.3	130	125.0	35.8	190	182.6	52.4	250	240.9	68.9	310	299.3	85.4
11	10.6	3.0	71	68.2	19.6	131	125.9	36.1	191	183.6	52.6	251	241.8	69.2	311	300.4	85.7
12	11.5	3.3	72	69.2	19.8	132	126.9	36.4	192	184.6	52.9	252	242.8	69.5	312	301.5	86.0
13	12.5	3.6	73	70.2	20.1	133	127.8	36.7	193	185.5	53.2	253	243.7	69.7	313	302.6	86.3
14	13.5	3.9	74	71.1	20.4	134	128.8	36.9	194	186.5	53.5	254	244.7	70.0	314	303.7	86.6
15	14.4	4.1	75	72.1	20.7	135	129.8	37.2	195	187.4	53.7	255	245.1	70.3	315	304.8	86.9
16	15.4	4.4	76	73.1	20.9	136	130.7	37.5	196	188.4	54.0	256	246.1	70.6	316	305.9	87.2
17	16.3	4.7	77	74.0	21.2	137	131.7	37.8	197	189.4	54.3	257	247.0	70.8	317	307.0	87.5
18	17.3	5.0	78	75.0	21.5	138	132.7	38.0	198	190.3	54.6	258	248.0	71.1	318	308.1	87.8
19	18.3	5.2	79	75.9	21.8	139	133.6	38.3	199	191.3	54.9	259	249.0	71.4	319	309.2	88.1
20	19.2	5.5	80	76.9	22.1	140	134.6	38.6	200	192.3	55.1	260	249.9	71.7	320	310.3	88.4
21	20.2	5.8	81	77.9	22.3	141	135.5	38.9	201	193.2	55.4	261	250.9	71.9	321	311.4	88.7
22	21.1	6.1	82	78.8	22.6	142	136.5	39.1	202	194.2	55.7	262	251.9	72.2	322	312.5	89.0
23	22.1	6.3	83	79.8	22.9	143	137.5	39.4	203	195.1	56.0	263	252.8	72.5	323	313.6	89.3
24	23.1	6.6	84	80.7	23.2	144	138.4	39.7	204	196.1	56.2	264	253.8	72.8	324	314.7	89.6
25	24.0	6.9	85	81.7	23.4	145	139.4	40.0	205	197.1	56.5	265	254.7	73.0	325	315.8	89.9
26	25.0	7.2	86	82.7	23.7	146	140.3	40.2	206	198.0	56.8	266	255.7	73.3	326	316.9	90.2
27	26.0	7.4	87	83.6	24.0	147	141.3	40.5	207	199.0	57.1	267	256.7	73.6	327	318.0	90.5
28	26.9	7.7	88	84.6	24.3	148	142.3	40.8	208	199.9	57.3	268	257.6	73.9	328	319.1	90.8
29	27.9	8.0	89	85.6	24.5	149	143.2	41.1	209	200.9	57.6	269	258.6	74.1	329	320.2	91.1
30	28.8	8.3	90	86.5	24.8	150	144.2	41.3	210	201.9	57.9	270	259.5	74.4	330	321.3	91.4
31	29.8	8.5	91	87.5	25.1	151	145.2	41.6	211	202.8	58.2	271	260.5	74.7	331	322.4	91.7
32	30.8	8.8	92	88.4	25.4	152	146.1	41.9	212	203.8	58.4	272	261.5	75.0	332	323.5	92.0
33	31.7	9.1	93	89.4	25.6	153	147.1	42.2	213	204.7	58.7	273	262.4	75.2	333	324.6	92.3
34	32.7	9.4	94	90.4	25.9	154	148.0	42.4	214	205.7	59.0	274	263.4	75.5	334	325.7	92.6
35	33.6	9.6	95	91.3	26.2	155	149.0	42.7	215	206.7	59.3	275	264.3	75.8	335	326.8	92.9
36	34.6	9.9	96	92.3	26.5	156	150.0	43.0	216	207.6	59.5	276	265.3	76.1	336	327.9	93.2
37	35.6	10.2	97	93.2	26.7	157	150.9	43.3	217	208.6	59.8	277	266.3	76.4	337	329.0	93.5
38	36.5	10.5	98	94.2	27.0	158	151.9	43.6	218	209.6	60.1	278	267.2	76.6	338	330.1	93.8
39	37.5	10.7	99	95.2	27.3	159	152.8	43.8	219	210.5	60.4	279	268.2	76.9	339	331.2	94.1
40	38.5	11.0	100	96.1	27.6	160	153.8	44.1	220	211.5	60.6	280	269.2	77.2	340	332.3	94.4
41	39.4	11.3	101	97.1	27.8	161	154.8	44.4	221	212.4	60.9	281	270.1	77.5	341	333.4	94.7
42	40.4	11.6	102	98.0	28.1	162	155.7	44.7	222	213.4	61.2	282	271.1	77.7	342	334.5	95.0
43	41.3	11.9	103	99.0	28.4	163	156.7	44.9	223	214.4	61.5	283	272.0	78.0	343	335.6	95.3
44	42.3	12.1	104	100.0	28.7	164	157.6	45.2	224	215.3	61.7	284	273.0	78.3	344	336.7	95.6
45	43.3	12.4	105	100.9	28.9	165	158.6	45.5	225	216.3	62.0	285	274.0	78.6	345	337.8	95.9
46	44.2	12.7	106	101.9	29.2	166	159.6	45.8	226	217.2	62.3	286	274.9	78.8	346	338.9	96.2
47	45.2	13.0	107	102.9	29.5	167	160.5	46.0	227	218.2	62.6	287	275.9	79.1	347	340.0	96.5
48	46.1	13.2	108	103.8	29.8	168	161.5	46.3	228	219.2	62.8	288	276.8	79.4	348	341.1	96.8
49	47.1	13.5	109	104.8	30.0	169	162.5	46.6	229	220.1	63.1	289	277.8	79.7	349	342.2	97.1
50	48.1	13.8	110	105.7	30.3	170	163.4	46.9	230	221.1	63.4	290	278.8	79.9	350	343.3	97.4
51	49.0	14.1	111	106.7	30.6	171	164.4	47.1	231	222.1	63.7	291	279.7	80.2	351	344.4	97.7
52	50.0	14.3	112	107.7	30.9	172	165.3	47.4	232	223.0	63.9	292	280.7	80.5	352	345.5	98.0
53	50.9	14.6	113	108.6	31.1	173	166.3	47.7	233	224.0	64.2	293	281.6	80.8	353	346.6	98.3
54	51.9	14.9	114	109.6	31.4	174	167.3	48.0	234	224.9	64.5	294	282.6	81.0	354	347.7	98.6
55	52.9	15.2	115	110.5	31.7	175	168.2	48.2	235	225.9	64.8	295	283.6	81.3	355	348.8	98.9
56	53.8	15.4	116	111.5	32.0	176	169.2	48.5	236	226.9	65.1	296	284.5	81.6	356	349.9	99.2
57	54.8	15.7	117	112.5	32.2	177	170.1	48.8	237	227.8	65.3	297	285.5	81.9	357	351.0	99.5
58	55.8	16.0	118	113.4	32.5	178	171.1	49.1	238	228.8	65.6	298	286.5	82.1	358	352.1	99.8
59	56.7	16.3	119	114.4	32.8	179	172.1	49.3	239	229.7	65.9	299	287.4	82.4	359	353.2	100.1
60	57.7	16.5	120	115.4	33.1	180	173.0	49.6	240	230.7	66.2	300	288.4	82.7	360	354.3	100.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

- 74 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

111

17 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.3	61	58.3	17.8	121	115.7	35.4	181	173.1	52.3	241	230.5	70.5
2	1.9	0.6	62	59.3	18.1	122	116.7	35.7	182	174.0	53.2	242	231.4	70.8
3	2.9	0.9	63	60.2	18.4	123	117.6	36.0	183	175.0	53.5	243	232.4	71.0
4	3.8	1.2	64	61.2	18.7	124	118.6	36.3	184	176.0	53.8	244	233.3	71.3
5	4.8	1.5	65	62.2	19.0	125	119.5	36.5	185	176.9	54.1	245	234.3	71.6
6	5.7	1.8	66	63.1	19.3	126	120.5	36.8	186	177.9	54.4	246	235.3	71.9
7	6.7	2.0	67	64.1	19.6	127	121.5	37.1	187	178.8	54.7	247	236.2	72.2
8	7.7	2.3	68	65.0	19.9	128	122.4	37.4	188	179.8	55.0	248	237.2	72.5
9	8.6	2.6	69	66.0	20.2	129	123.4	37.7	189	180.7	55.3	249	238.1	72.8
10	9.6	2.9	70	66.9	20.5	130	124.3	38.0	190	181.7	55.6	250	239.1	73.1
11	10.5	3.2	71	67.9	20.8	131	125.3	38.3	191	182.7	55.8	251	240.0	73.4
12	11.5	3.5	72	68.9	21.1	132	126.2	38.6	192	183.6	56.1	252	241.0	73.7
13	12.4	3.8	73	69.8	21.4	133	127.2	38.9	193	184.6	56.4	253	241.9	74.0
14	13.4	4.1	74	70.8	21.6	134	128.1	39.2	194	185.5	56.7	254	242.9	74.3
15	14.3	4.4	75	71.7	21.9	135	129.1	39.5	195	186.5	57.0	255	243.9	74.6
16	15.3	4.7	76	72.7	22.2	136	130.1	39.8	196	187.4	57.3	256	244.8	74.8
17	16.3	5.0	77	73.6	22.5	137	131.0	40.1	197	188.4	57.6	257	245.8	75.1
18	17.2	5.3	78	74.6	22.8	138	132.0	40.3	198	189.3	57.9	258	246.7	75.4
19	18.2	5.6	79	75.5	23.1	139	132.9	40.6	199	190.3	58.2	259	247.7	75.7
20	19.1	5.8	80	76.5	23.4	140	133.9	40.9	200	191.3	58.5	260	248.6	76.0
21	20.1	6.1	81	77.5	23.7	141	134.8	41.2	201	192.2	58.8	261	249.6	76.3
22	21.0	6.4	82	78.4	24.0	142	135.8	41.5	202	193.2	59.1	262	250.6	76.6
23	22.0	6.7	83	79.4	24.3	143	136.8	41.8	203	194.1	59.4	263	251.5	76.9
24	23.0	7.0	84	80.3	24.6	144	137.7	42.1	204	195.1	59.6	264	252.5	77.2
25	23.9	7.3	85	81.3	24.9	145	138.7	42.4	205	196.0	59.9	265	253.4	77.5
26	24.9	7.6	86	82.2	25.1	146	139.6	42.7	206	197.0	60.2	266	254.4	77.8
27	25.8	7.9	87	83.2	25.4	147	140.6	43.0	207	198.0	60.5	267	255.3	78.1
28	26.8	8.2	88	84.2	25.7	148	141.5	43.3	208	198.9	60.8	268	256.3	78.4
29	27.7	8.5	89	85.1	26.0	149	142.5	43.6	209	199.9	61.1	269	257.2	78.6
30	28.7	8.8	90	86.1	26.3	150	143.4	43.9	210	200.8	61.4	270	258.2	78.9
31	29.6	9.1	91	87.0	26.6	151	144.4	44.1	211	201.8	61.7	271	259.2	79.2
32	30.6	9.4	92	88.0	26.9	152	145.4	44.4	212	202.7	62.0	272	260.1	79.5
33	31.6	9.6	93	88.9	27.2	153	146.3	44.7	213	203.7	62.3	273	261.1	79.8
34	32.5	9.9	94	89.9	27.5	154	147.3	45.0	214	204.6	62.6	274	262.0	80.1
35	33.5	10.2	95	90.8	27.8	155	148.2	45.3	215	205.6	62.9	275	263.0	80.4
36	34.4	10.5	96	91.8	28.1	156	149.2	45.6	216	206.6	63.2	276	263.9	80.7
37	35.4	10.8	97	92.8	28.4	157	150.1	45.9	217	207.5	63.4	277	264.9	81.0
38	36.3	11.1	98	93.7	28.7	158	151.1	46.2	218	208.5	63.7	278	265.9	81.3
39	37.3	11.4	99	94.7	28.9	159	152.1	46.5	219	209.4	64.0	279	266.8	81.6
40	38.3	11.7	100	95.6	29.2	160	153.0	46.8	220	210.4	64.3	280	267.8	81.9
41	39.2	12.0	101	96.6	29.5	161	154.0	47.1	221	211.3	64.6	281	268.7	82.2
42	40.2	12.3	102	97.5	29.8	162	154.9	47.4	222	212.3	64.9	282	269.7	82.4
43	41.1	12.6	103	98.5	30.1	163	155.9	47.7	223	213.3	65.2	283	270.6	82.7
44	42.1	12.9	104	99.5	30.4	164	156.8	47.9	224	214.2	65.5	284	271.6	83.0
45	43.0	13.2	105	100.4	30.7	165	157.8	48.2	225	215.2	65.8	285	272.5	83.3
46	44.0	13.4	106	101.4	31.0	166	158.7	48.5	226	216.1	66.1	286	273.5	83.6
47	44.9	13.7	107	102.3	31.3	167	159.7	48.8	227	217.1	66.4	287	274.5	83.9
48	45.9	14.0	108	103.3	31.6	168	160.7	49.1	228	218.0	66.7	288	275.4	84.2
49	46.9	14.3	109	104.2	31.9	169	161.6	49.4	229	219.0	67.0	289	276.4	84.5
50	47.8	14.6	110	105.2	32.2	170	162.6	49.7	230	220.0	67.2	290	277.3	84.8
51	48.8	14.9	111	106.1	32.5	171	163.5	50.0	231	220.9	67.5	291	278.3	85.1
52	49.7	15.2	112	107.1	32.7	172	164.5	50.3	232	221.9	67.8	292	279.2	85.4
53	50.7	15.5	113	108.1	33.0	173	165.4	50.6	233	222.8	68.1	293	280.2	85.7
54	51.6	15.8	114	109.0	33.3	174	166.4	50.9	234	223.8	68.4	294	281.2	86.0
55	52.6	16.1	115	110.0	33.6	175	167.4	51.2	235	224.7	68.7	295	282.1	86.2
56	53.6	16.4	116	110.9	33.9	176	168.3	51.5	236	225.7	69.0	296	283.1	86.5
57	54.5	16.7	117	111.9	34.2	177	169.3	51.7	237	226.6	69.3	297	284.0	86.8
58	55.5	17.0	118	112.8	34.5	178	170.2	52.0	238	227.6	69.6	298	285.0	87.1
59	56.4	17.2	119	113.8	34.8	179	171.2	52.3	239	228.6	69.9	299	285.9	87.4
60	57.4	17.5	120	114.8	35.1	180	172.1	52.6	240	229.5	70.2	300	286.9	87.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

18 Degrees.											
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	1.0	0.3	61	58.0	18.9	121	115.1	37.4	181	172.1	55.9
2	1.9	0.6	62	59.0	19.2	122	116.0	37.7	182	173.1	56.2
3	2.9	0.9	63	59.9	19.5	123	117.0	38.0	183	174.0	56.6
4	3.8	1.2	64	60.9	19.8	124	117.9	38.3	184	175.0	56.9
5	4.8	1.5	65	61.8	20.1	125	118.9	38.6	185	175.9	57.2
6	5.7	1.9	66	62.8	20.4	126	119.8	38.9	186	176.9	57.5
7	6.7	2.2	67	63.7	20.7	127	120.8	39.2	187	177.8	57.8
8	7.6	2.5	68	64.7	21.0	128	121.7	39.6	188	178.8	58.1
9	8.6	2.8	69	65.6	21.3	129	122.7	39.9	189	179.7	58.4
10	9.5	3.1	70	66.6	21.6	130	123.6	40.2	190	180.7	58.7
11	10.5	3.4	71	67.5	21.9	131	124.6	40.5	191	181.7	59.0
12	11.4	3.7	72	68.5	22.2	132	125.5	40.8	192	182.6	59.3
13	12.4	4.0	73	69.4	22.6	133	126.5	41.1	193	183.6	59.6
14	13.3	4.3	74	70.4	22.9	134	127.4	41.4	194	184.5	59.9
15	14.3	4.6	75	71.3	23.2	135	128.4	41.7	195	185.5	60.3
16	15.2	4.9	76	72.3	23.5	136	129.3	42.0	196	186.4	60.6
17	16.2	5.3	77	73.2	23.8	137	130.3	42.3	197	187.4	60.9
18	17.1	5.6	78	74.2	24.1	138	131.2	42.6	198	188.3	61.2
19	18.1	5.9	79	75.1	24.4	139	132.2	43.0	199	189.3	61.5
20	19.0	6.2	80	76.1	24.7	140	133.1	43.3	200	190.2	61.8
21	20.0	6.5	81	77.0	25.0	141	134.1	43.6	201	191.2	62.1
22	20.9	6.8	82	78.0	25.3	142	135.1	43.9	202	192.1	62.4
23	21.9	7.1	83	78.9	25.6	143	136.0	44.2	203	193.1	62.7
24	22.8	7.4	84	79.9	26.0	144	137.0	44.5	204	194.0	63.0
25	23.8	7.7	85	80.8	26.3	145	137.9	44.8	205	195.0	63.3
26	24.7	8.0	86	81.8	26.6	146	138.9	45.1	206	195.9	63.7
27	25.7	8.3	87	82.7	26.9	147	139.8	45.4	207	196.9	64.0
28	26.6	8.7	88	83.7	27.2	148	140.8	45.7	208	197.8	64.3
29	27.6	9.0	89	84.6	27.5	149	141.7	46.0	209	198.8	64.6
30	28.5	9.3	90	85.6	27.8	150	142.7	46.4	210	199.7	64.9
31	29.5	9.6	91	86.5	28.1	151	143.6	46.7	211	200.7	65.2
32	30.4	9.9	92	87.5	28.4	152	144.6	47.0	212	201.6	65.5
33	31.4	10.2	93	88.4	28.7	153	145.5	47.3	213	202.6	65.8
34	32.3	10.5	94	89.4	29.0	154	146.5	47.6	214	203.5	66.1
35	33.3	10.8	95	90.4	29.4	155	147.4	47.9	215	204.5	66.4
36	34.2	11.1	96	91.3	29.7	156	148.4	48.2	216	205.4	66.7
37	35.2	11.4	97	92.3	30.0	157	149.3	48.5	217	206.4	67.1
38	36.1	11.7	98	93.2	30.3	158	150.3	48.8	218	207.3	67.4
39	37.1	12.1	99	94.2	30.6	159	151.2	49.1	219	208.3	67.7
40	38.0	12.4	100	95.1	30.9	160	152.2	49.4	220	209.2	68.0
41	39.0	12.7	101	96.1	31.2	161	153.1	49.8	221	210.2	68.3
42	39.9	13.0	102	97.0	31.5	162	154.1	50.1	222	211.1	68.6
43	40.9	13.3	103	98.0	31.8	163	155.0	50.4	223	212.1	68.9
44	41.8	13.6	104	98.9	32.1	164	156.0	50.7	224	213.0	69.2
45	42.8	13.9	105	99.9	32.4	165	156.9	51.0	225	214.0	69.5
46	43.7	14.2	106	100.8	32.8	166	157.9	51.3	226	214.9	69.8
47	44.7	14.5	107	101.8	33.1	167	158.8	51.6	227	215.9	70.1
48	45.7	14.8	108	102.7	33.4	168	159.8	51.9	228	216.8	70.5
49	46.6	15.1	109	103.7	33.7	169	160.7	52.2	229	217.8	70.8
50	47.6	15.5	110	104.6	34.0	170	161.7	52.5	230	218.7	71.1
51	48.5	15.8	111	105.6	34.3	171	162.6	52.8	231	219.7	71.4
52	49.5	16.1	112	106.5	34.6	172	163.6	53.2	232	220.6	71.7
53	50.4	16.4	113	107.5	34.9	173	164.5	53.5	233	221.6	72.0
54	51.4	16.7	114	108.4	35.2	174	165.5	53.8	234	222.5	72.3
55	52.3	17.0	115	109.4	35.5	175	166.4	54.1	235	223.5	72.6
56	53.3	17.3	116	110.3	35.8	176	167.4	54.4	236	224.4	72.9
57	54.2	17.6	117	111.3	36.2	177	168.3	54.7	237	225.4	73.2
58	55.2	17.9	118	112.2	36.5	178	169.3	55.0	238	226.4	73.5
59	56.1	18.2	119	113.2	36.8	179	170.2	55.3	239	227.3	73.9
60	57.1	18.5	120	114.1	37.1	180	171.2	55.6	240	228.3	74.2
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

113

19 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.3	61	57.7	19.9	121	114.4	39.4	181	171.1	58.9	241	227.9	78.5
2	1.9	0.7	62	58.6	20.2	122	115.4	39.7	182	172.1	59.3	242	228.8	78.8
3	2.8	1.0	63	59.6	20.5	123	116.3	40.0	183	173.0	59.6	243	229.8	79.1
4	3.8	1.3	64	60.5	20.8	124	117.2	40.4	184	174.0	59.9	244	230.7	79.4
5	4.7	1.6	65	61.5	21.2	125	118.2	40.7	185	174.9	60.2	245	231.7	79.8
6	5.7	2.0	66	62.4	21.5	126	119.1	41.0	186	175.9	60.6	246	232.6	80.1
7	6.6	2.3	67	63.3	21.8	127	120.1	41.3	187	176.8	60.9	247	233.5	80.4
8	7.6	2.6	68	64.3	22.1	128	121.0	41.7	188	177.8	61.2	248	234.5	80.7
9	8.5	2.9	69	65.2	22.5	129	122.0	42.0	189	178.7	61.5	249	235.4	81.1
10	9.5	3.3	70	66.2	22.8	130	122.9	42.3	190	179.6	61.9	250	236.4	81.4
11	10.4	3.6	71	67.1	23.1	131	123.9	42.6	191	180.6	62.2	251	237.3	81.7
12	11.3	3.9	72	68.1	23.4	132	124.8	43.0	192	181.5	62.5	252	238.3	82.0
13	12.3	4.2	73	69.0	23.8	133	125.8	43.3	193	182.5	62.8	253	239.2	82.4
14	13.2	4.6	74	70.0	24.1	134	126.7	43.6	194	183.4	63.2	254	240.2	82.7
15	14.2	4.9	75	70.9	24.4	135	127.6	44.0	195	184.4	63.5	255	241.1	83.0
16	15.1	5.2	76	71.9	24.7	136	128.6	44.3	196	185.3	63.8	256	242.1	83.3
17	16.1	5.5	77	72.8	25.1	137	129.5	44.6	197	186.3	64.1	257	243.0	83.7
18	17.0	5.9	78	73.8	25.4	138	130.5	44.9	198	187.2	64.5	258	243.9	84.0
19	18.0	6.2	79	74.7	25.7	139	131.4	45.3	199	188.2	64.8	259	244.9	84.3
20	18.9	6.5	80	75.6	26.0	140	132.4	45.6	200	189.1	65.1	260	245.8	84.6
21	19.9	6.8	81	76.6	26.4	141	133.3	45.9	201	190.0	65.4	261	246.8	85.0
22	20.8	7.2	82	77.5	26.7	142	134.3	46.2	202	191.0	65.8	262	247.7	85.3
23	21.7	7.5	83	78.5	27.0	143	135.2	46.6	203	191.9	66.1	263	248.7	85.6
24	22.7	7.8	84	79.4	27.3	144	136.2	46.9	204	192.9	66.4	264	249.6	86.0
25	23.6	8.1	85	80.4	27.7	145	137.1	47.2	205	193.8	66.7	265	250.6	86.3
26	24.6	8.5	86	81.3	28.0	146	138.0	47.5	206	194.8	67.1	266	251.5	86.6
27	25.5	8.8	87	82.3	28.3	147	139.0	47.9	207	195.7	67.4	267	252.5	86.9
28	26.5	9.1	88	83.2	28.7	148	139.9	48.2	208	196.7	67.7	268	253.4	87.3
29	27.4	9.4	89	84.2	29.0	149	140.9	48.5	209	197.6	68.0	269	254.3	87.6
30	28.4	9.8	90	85.1	29.3	150	141.8	48.8	210	198.6	68.4	270	255.3	87.9
31	29.3	10.1	91	86.0	29.6	151	142.8	49.2	211	199.5	68.7	271	256.2	88.2
32	30.3	10.4	92	87.0	30.0	152	143.7	49.5	212	200.4	69.0	272	257.2	88.6
33	31.2	10.7	93	87.9	30.3	153	144.7	49.8	213	201.4	69.3	273	258.1	88.9
34	32.1	11.1	94	88.9	30.6	154	145.6	50.1	214	202.3	69.7	274	259.1	89.2
35	33.1	11.4	95	89.8	30.9	155	146.6	50.5	215	203.3	70.0	275	260.0	89.5
36	34.0	11.7	96	90.8	31.3	156	147.5	50.8	216	204.2	70.3	276	261.0	89.9
37	35.0	12.0	97	91.7	31.6	157	148.4	51.1	217	205.2	70.6	277	261.9	90.2
38	35.9	12.4	98	92.7	31.9	158	149.4	51.4	218	206.1	71.0	278	262.9	90.5
39	36.9	12.7	99	93.6	32.2	159	150.3	51.8	219	207.1	71.3	279	263.8	90.8
40	37.8	13.0	100	94.6	32.6	160	151.3	52.1	220	208.0	71.6	280	264.7	91.2
41	38.8	13.3	101	95.5	32.9	161	152.2	52.4	221	209.0	72.0	281	265.7	91.5
42	39.7	13.7	102	96.4	33.2	162	153.2	52.7	222	209.9	72.3	282	266.6	91.8
43	40.7	14.0	103	97.4	33.5	163	154.1	53.1	223	210.9	72.6	283	267.6	92.1
44	41.6	14.3	104	98.3	33.9	164	155.1	53.4	224	211.8	72.9	284	268.5	92.5
45	42.5	14.7	105	99.3	34.2	165	156.0	53.7	225	212.7	73.3	285	269.5	92.8
46	43.5	15.0	106	100.2	34.5	166	157.0	54.0	226	213.7	73.6	286	270.4	93.1
47	44.4	15.3	107	101.2	34.8	167	157.9	54.4	227	214.6	73.9	287	271.4	93.4
48	45.4	15.6	108	102.1	35.2	168	158.8	54.7	228	215.6	74.2	288	272.3	93.8
49	46.3	16.0	109	103.1	35.5	169	159.8	55.0	229	216.5	74.6	289	273.3	94.1
50	47.3	16.3	110	104.0	35.8	170	160.7	55.3	230	217.5	74.9	290	274.2	94.4
51	48.2	16.6	111	105.0	36.1	171	161.7	55.7	231	218.4	75.2	291	275.1	94.7
52	49.2	16.9	112	105.9	36.5	172	162.6	56.0	232	219.4	75.5	292	276.1	95.1
53	50.1	17.3	113	106.8	36.8	173	163.6	56.3	233	220.3	75.9	293	277.0	95.4
54	51.1	17.6	114	107.8	37.1	174	164.5	56.6	234	221.3	76.2	294	278.0	95.7
55	52.0	17.9	115	108.7	37.4	175	165.5	57.0	235	222.2	76.5	295	278.9	96.0
56	52.9	18.2	116	109.7	37.8	176	166.4	57.3	236	223.1	76.8	296	279.9	96.4
57	53.9	18.6	117	110.6	38.1	177	167.4	57.6	237	224.1	77.2	297	280.8	96.7
58	54.8	18.9	118	111.6	38.4	178	168.3	58.0	238	225.0	77.5	298	281.8	97.0
59	55.8	19.2	119	112.5	38.7	179	169.2	58.3	239	226.0	77.8	299	282.7	97.3
60	56.7	19.5	120	113.5	39.1	180	170.2	58.6	240	226.9	78.1	300	283.7	97.7
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

71 Degrees.

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TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

20 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.3	61	57.3	20.9	121	113.7	41.4	181	170.1	61.9	241	226.5	82.4
2	1.9	0.7	62	58.3	21.2	122	114.6	41.7	182	171.0	62.2	242	227.4	82.8
3	2.8	1.0	63	59.2	21.5	123	115.6	42.1	183	172.0	62.6	243	228.3	83.1
4	3.8	1.4	64	60.1	21.9	124	116.5	42.4	184	172.9	62.9	244	229.3	83.5
5	4.7	1.7	65	61.1	22.2	125	117.5	42.8	185	173.8	63.3	245	230.2	83.8
6	5.6	2.1	66	62.0	22.6	126	118.4	43.1	186	174.8	63.6	246	231.2	84.1
7	6.6	2.4	67	63.0	22.9	127	119.3	43.4	187	175.7	64.0	247	232.1	84.5
8	7.5	2.7	68	63.9	23.3	128	120.3	43.8	188	176.7	64.3	248	233.0	84.8
9	8.5	3.1	69	64.8	23.6	129	121.2	44.1	189	177.6	64.6	249	234.0	85.2
10	9.4	3.4	70	65.8	23.9	130	122.2	44.5	190	178.5	65.0	250	234.9	85.5
11	10.3	3.8	71	66.7	24.3	131	123.1	44.8	191	179.5	65.3	251	235.9	85.8
12	11.3	4.1	72	67.7	24.6	132	124.0	45.1	192	180.4	65.7	252	236.8	86.2
13	12.2	4.4	73	68.6	25.0	133	125.0	45.5	193	181.4	66.0	253	237.7	86.5
14	13.2	4.8	74	69.5	25.3	134	125.9	45.8	194	182.3	66.4	254	238.7	86.9
15	14.1	5.1	75	70.5	25.7	135	126.9	46.2	195	183.2	66.7	255	239.6	87.2
16	15.0	5.5	76	71.4	26.0	136	127.8	46.5	196	184.2	67.0	256	240.6	87.6
17	16.0	5.8	77	72.4	26.3	137	128.7	46.9	197	185.1	67.4	257	241.5	87.9
18	16.9	6.2	78	73.3	26.7	138	129.7	47.2	198	186.1	67.7	258	242.4	88.2
19	17.9	6.5	79	74.2	27.0	139	130.6	47.5	199	187.0	68.1	259	243.4	88.6
20	18.8	6.8	80	75.2	27.4	140	131.6	47.9	200	187.9	68.4	260	244.3	88.9
21	19.7	7.2	81	76.1	27.7	141	132.5	48.2	201	188.9	68.7	261	245.3	89.3
22	20.7	7.5	82	77.1	28.0	142	133.4	48.6	202	189.8	69.1	262	246.2	89.6
23	21.6	7.9	83	78.0	28.4	143	134.4	48.9	203	190.8	69.4	263	247.1	90.0
24	22.6	8.2	84	78.9	28.7	144	135.3	49.3	204	191.7	69.8	264	248.1	90.3
25	23.5	8.6	85	79.9	29.1	145	136.3	49.6	205	192.6	70.1	265	249.0	90.6
26	24.4	8.9	86	80.8	29.4	146	137.2	49.9	206	193.6	70.5	266	250.0	91.0
27	25.4	9.2	87	81.8	29.8	147	138.1	50.3	207	194.5	70.8	267	250.9	91.3
28	26.3	9.6	88	82.7	30.1	148	139.1	50.6	208	195.5	71.1	268	251.8	91.7
29	27.3	9.9	89	83.6	30.4	149	140.0	51.0	209	196.4	71.5	269	252.8	92.0
30	28.2	10.3	90	84.6	30.8	150	141.0	51.3	210	197.3	71.8	270	253.7	92.3
31	29.1	10.6	91	85.5	31.1	151	141.9	51.6	211	198.3	72.2	271	254.7	92.7
32	30.1	10.9	92	86.5	31.5	152	142.8	52.0	212	199.2	72.5	272	255.6	93.0
33	31.0	11.3	93	87.4	31.8	153	143.8	52.3	213	200.2	72.9	273	256.5	93.4
34	31.9	11.6	94	88.3	32.1	154	144.7	52.7	214	201.1	73.2	274	257.5	93.7
35	32.9	12.0	95	89.3	32.5	155	145.7	53.0	215	202.0	73.5	275	258.4	94.1
36	33.8	12.3	96	90.2	32.8	156	146.6	53.4	216	203.0	73.9	276	259.4	94.4
37	34.8	12.7	97	91.2	33.2	157	147.5	53.7	217	203.9	74.2	277	260.3	94.7
38	35.7	13.0	98	92.1	33.5	158	148.5	54.0	218	204.9	74.6	278	261.2	95.1
39	36.6	13.3	99	93.0	33.9	159	149.4	54.4	219	205.8	74.9	279	262.2	95.4
40	37.6	13.7	100	94.0	34.2	160	150.4	54.7	220	206.7	75.2	280	263.1	95.8
41	38.5	14.0	101	94.9	34.5	161	151.3	55.1	221	207.7	75.6	281	264.1	96.1
42	39.5	14.4	102	95.8	34.9	162	152.2	55.4	222	208.6	75.9	282	265.0	96.4
43	40.4	14.7	103	96.8	35.2	163	153.2	55.7	223	209.6	76.3	283	265.9	96.8
44	41.3	15.0	104	97.7	35.6	164	154.1	56.1	224	210.5	76.6	284	266.9	97.1
45	42.3	15.4	105	98.7	35.9	165	155.0	56.4	225	211.4	77.0	285	267.8	97.5
46	43.2	15.7	106	99.6	36.3	166	156.0	56.8	226	212.4	77.3	286	268.8	97.8
47	44.2	16.1	107	100.6	36.6	167	156.9	57.1	227	213.3	77.7	287	269.7	98.2
48	45.1	16.4	108	101.5	36.9	168	157.9	57.5	228	214.2	78.0	288	270.6	98.5
49	46.0	16.8	109	102.4	37.3	169	158.8	57.8	229	215.2	78.3	289	271.6	98.8
50	47.0	17.1	110	103.4	37.6	170	159.7	58.1	230	216.1	78.7	290	272.5	99.2
51	47.9	17.4	111	104.3	38.0	171	160.7	58.5	231	217.1	79.0	291	273.5	99.5
52	48.9	17.8	112	105.2	38.3	172	161.6	58.8	232	218.0	79.3	292	274.4	99.9
53	49.8	18.1	113	106.2	38.6	173	162.6	59.2	233	218.9	79.7	293	275.3	100.2
54	50.7	18.5	114	107.1	39.0	174	163.5	59.5	234	219.9	80.0	294	276.3	100.6
55	51.7	18.8	115	108.1	39.3	175	164.4	59.9	235	220.8	80.4	295	277.2	100.9
56	52.6	19.2	116	109.0	39.7	176	165.4	60.2	236	221.8	80.7	296	278.1	101.2
57	53.6	19.5	117	109.9	40.0	177	166.3	60.5	237	222.7	81.1	297	279.1	101.6
58	54.5	19.8	118	110.9	40.4	178	167.3	60.9	238	223.6	81.4	298	280.0	101.9
59	55.4	20.2	119	111.8	40.7	179	168.2	61.2	239	224.6	81.7	299	281.0	102.3
60	56.4	20.5	120	112.8	41.0	180	169.1	61.6	240	225.5	82.1	300	281.9	102.6
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

70 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

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21 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.4	61	56.9	21.9	121	118.0	43.4	181	169.0	64.9	241	225.0	86.4
2	1.9	0.7	62	57.9	22.2	122	118.9	43.7	182	169.9	65.2	242	225.9	86.7
3	2.8	1.1	63	58.8	22.6	123	114.8	44.1	183	170.8	65.6	243	226.9	87.1
4	3.7	1.4	64	59.7	22.9	124	115.8	44.4	184	171.8	65.9	244	227.8	87.4
5	4.7	1.8	65	60.7	23.3	125	116.7	44.8	185	172.7	66.3	245	228.7	87.8
6	5.6	2.2	66	61.6	23.7	126	117.6	45.2	186	173.6	66.7	246	229.7	88.2
7	6.5	2.5	67	62.5	24.0	127	118.6	45.5	187	174.6	67.0	247	230.6	88.5
8	7.5	2.9	68	63.5	24.4	128	119.5	45.9	188	175.5	67.4	248	231.5	88.9
9	8.4	3.2	69	64.4	24.7	129	120.4	46.2	189	176.4	67.7	249	232.5	89.2
10	9.3	3.6	70	65.4	25.1	130	121.4	46.6	190	177.4	68.1	250	233.4	89.6
11	10.3	3.9	71	66.3	25.4	131	122.3	46.9	191	178.3	68.4	251	234.3	90.0
12	11.2	4.3	72	67.2	25.8	132	123.2	47.3	192	179.2	68.8	252	235.3	90.3
13	12.1	4.7	73	68.2	26.2	133	124.2	47.7	193	180.2	69.2	253	236.2	90.7
14	13.1	5.0	74	69.1	26.5	134	125.1	48.0	194	181.1	69.5	254	237.1	91.0
15	14.0	5.4	75	70.0	26.9	135	126.0	48.4	195	182.0	69.9	255	238.1	91.4
16	14.9	5.7	76	71.0	27.2	136	127.0	48.7	196	183.0	70.2	256	239.0	91.7
17	15.9	6.1	77	71.9	27.6	137	127.9	49.1	197	183.9	70.6	257	239.9	92.1
18	16.8	6.5	78	72.8	28.0	138	128.8	49.5	198	184.8	71.0	258	240.9	92.5
19	17.7	6.8	79	73.8	28.3	139	129.8	49.8	199	185.8	71.3	259	241.8	92.8
20	18.7	7.2	80	74.7	28.7	140	130.7	50.2	200	186.7	71.7	260	242.7	93.2
21	19.6	7.5	81	75.6	29.0	141	131.6	50.5	201	187.6	72.0	261	243.7	93.5
22	20.5	7.9	82	76.6	29.4	142	132.6	50.9	202	188.6	72.4	262	244.6	93.9
23	21.5	8.2	83	77.5	29.7	143	133.5	51.2	203	189.5	72.7	263	245.5	94.3
24	22.4	8.6	84	78.4	30.1	144	134.4	51.6	204	190.5	73.1	264	246.5	94.6
25	23.3	9.0	85	79.4	30.5	145	135.4	52.0	205	191.4	73.5	265	247.4	95.0
26	24.3	9.3	86	80.3	30.8	146	136.3	52.3	206	192.3	73.8	266	248.3	95.3
27	25.2	9.7	87	81.2	31.2	147	137.2	52.7	207	193.3	74.2	267	249.3	95.7
28	26.1	10.0	88	82.2	31.5	148	138.2	53.0	208	194.2	74.5	268	250.2	96.0
29	27.1	10.4	89	83.1	31.9	149	139.1	53.4	209	195.1	74.9	269	251.1	96.4
30	28.0	10.8	90	84.0	32.8	150	140.0	53.8	210	196.1	75.3	270	252.1	96.8
31	28.9	11.1	91	85.0	32.6	151	141.0	54.1	211	197.0	75.6	271	253.0	97.1
32	29.9	11.5	92	85.9	33.0	152	141.9	54.5	212	197.9	76.0	272	253.9	97.5
33	30.8	11.8	93	86.8	33.3	153	142.8	54.8	213	198.9	76.3	273	254.9	97.8
34	31.7	12.2	94	87.8	33.7	154	143.8	55.2	214	199.8	76.7	274	255.8	98.2
35	32.7	12.5	95	88.7	34.0	155	144.7	55.5	215	200.7	77.0	275	256.7	98.6
36	33.6	12.9	96	89.6	34.4	156	145.6	55.9	216	201.7	77.4	276	257.7	98.9
37	34.5	13.3	97	90.6	34.8	157	146.6	56.3	217	202.6	77.8	277	258.6	99.3
38	35.5	13.6	98	91.5	35.1	158	147.5	56.6	218	203.5	78.1	278	259.5	99.6
39	36.4	14.0	99	92.4	35.5	159	148.4	57.0	219	204.5	78.5	279	260.5	100.0
40	37.3	14.3	100	93.4	35.8	160	149.4	57.3	220	205.4	78.8	280	261.4	100.3
41	38.3	14.7	101	94.3	36.2	161	150.3	57.7	221	206.3	79.2	281	262.3	100.7
42	39.2	15.1	102	95.2	36.6	162	151.2	58.1	222	207.3	79.6	282	263.3	101.1
43	40.1	15.4	103	96.2	36.9	163	152.2	58.4	223	208.2	79.9	283	264.2	101.4
44	41.1	15.8	104	97.1	37.3	164	153.1	58.8	224	209.1	80.3	284	265.1	101.8
45	42.0	16.1	105	98.0	37.6	165	154.0	59.1	225	210.1	80.6	285	266.1	102.1
46	42.9	16.5	106	99.0	38.0	166	155.0	59.5	226	211.0	81.0	286	267.0	102.5
47	43.9	16.8	107	99.9	38.3	167	155.9	59.8	227	211.9	81.3	287	267.9	102.9
48	44.8	17.2	108	100.8	38.7	168	156.8	60.2	228	212.9	81.7	288	268.9	103.2
49	45.7	17.6	109	101.8	39.1	169	157.8	60.6	229	213.8	82.1	289	269.8	103.6
50	46.7	17.9	110	102.7	39.4	170	158.7	60.9	230	214.7	82.4	290	270.7	103.9
51	47.6	18.3	111	103.6	39.8	171	159.6	61.3	231	215.7	82.8	291	271.7	104.3
52	48.5	18.6	112	104.6	40.1	172	160.6	61.6	232	216.6	83.1	292	272.6	104.6
53	49.5	19.0	113	105.5	40.5	173	161.5	62.0	233	217.5	83.5	293	273.5	105.0
54	50.4	19.4	114	106.4	40.9	174	162.4	62.4	234	218.5	83.9	294	274.5	105.4
55	51.3	19.7	115	107.4	41.2	175	163.4	62.7	235	219.4	84.2	295	275.4	105.7
56	52.3	20.1	116	108.3	41.6	176	164.3	63.1	236	220.3	84.6	296	276.3	106.1
57	53.2	20.4	117	109.2	41.9	177	165.2	63.4	237	221.3	84.9	297	277.3	106.4
58	54.1	20.8	118	110.2	42.3	178	166.2	63.8	238	222.2	85.3	298	278.2	106.8
59	55.1	21.1	119	111.1	42.6	179	167.1	64.1	239	223.1	85.6	299	279.1	107.2
60	56.0	21.5	120	112.0	43.0	180	168.0	64.5	240	224.1	86.0	300	280.1	107.5
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

22 Degrees.

Lat.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.4	61	56.6	22.9	121	112.2	45.3	181	167.8	67.8	241	223.5	90.3
2	1.9	0.7	62	57.5	23.2	122	113.1	45.7	182	168.7	68.2	242	224.4	90.7
3	2.8	1.1	63	58.4	23.6	123	114.0	46.1	183	169.7	68.6	243	225.3	91.0
4	3.7	1.5	64	59.3	24.0	124	115.0	46.5	184	170.6	68.9	244	226.2	91.4
5	4.6	1.9	65	60.3	24.3	125	115.9	46.8	185	171.5	69.3	245	227.2	91.8
6	5.6	2.2	66	61.2	24.7	126	116.8	47.2	186	172.5	69.7	246	228.1	92.2
7	6.5	2.6	67	62.1	25.1	127	117.8	47.6	187	173.4	70.1	247	229.0	92.5
8	7.4	3.0	68	63.0	25.5	128	118.7	47.9	188	174.3	70.4	248	229.9	92.9
9	8.3	3.4	69	64.0	25.8	129	119.6	48.3	189	175.2	70.8	249	230.9	93.3
10	9.3	3.7	70	64.9	26.2	130	120.5	48.7	190	176.2	71.2	250	231.8	93.7
11	10.2	4.1	71	65.8	26.6	131	121.5	49.1	191	177.1	71.5	251	232.7	94.0
12	11.1	4.5	72	66.8	27.0	132	122.4	49.4	192	178.0	71.9	252	233.7	94.4
13	12.1	4.9	73	67.7	27.3	133	123.3	49.8	193	178.9	72.3	253	234.6	94.8
14	13.0	5.2	74	68.6	27.7	134	124.2	50.2	194	179.9	72.7	254	235.5	95.2
15	13.9	5.6	75	69.5	28.1	135	125.2	50.6	195	180.8	73.0	255	236.4	95.5
16	14.8	6.0	76	70.5	28.5	136	126.1	50.9	196	181.7	73.4	256	237.4	95.9
17	15.8	6.4	77	71.4	28.8	137	127.0	51.3	197	182.7	73.8	257	238.3	96.3
18	16.7	6.7	78	72.3	29.2	138	128.0	51.7	198	183.6	74.2	258	239.2	96.6
19	17.6	7.1	79	73.2	29.6	139	128.9	52.1	199	184.5	74.5	259	240.1	97.0
20	18.5	7.5	80	74.2	30.0	140	129.8	52.4	200	185.4	74.9	260	241.1	97.4
21	19.5	7.9	81	75.1	30.3	141	130.7	52.8	201	186.4	75.3	261	242.0	97.8
22	20.4	8.2	82	76.0	30.7	142	131.7	53.2	202	187.3	75.7	262	242.9	98.1
23	21.3	8.6	83	77.0	31.1	143	132.6	53.6	203	188.2	76.0	263	243.8	98.5
24	22.3	9.0	84	77.9	31.5	144	133.5	53.9	204	189.1	76.4	264	244.8	98.9
25	23.2	9.4	85	78.8	31.8	145	134.4	54.3	205	190.1	76.8	265	245.7	99.3
26	24.1	9.7	86	79.7	32.2	146	135.4	54.7	206	191.0	77.2	266	246.6	99.6
27	25.0	10.1	87	80.7	32.6	147	136.3	55.1	207	191.9	77.5	267	247.6	100.0
28	26.0	10.5	88	81.6	33.0	148	137.2	55.4	208	192.9	77.9	268	248.5	100.4
29	26.9	10.9	89	82.5	33.3	149	138.2	55.8	209	193.8	78.3	269	249.4	100.8
30	27.8	11.2	90	83.4	33.7	150	139.1	56.2	210	194.7	78.7	270	250.3	101.1
31	28.7	11.6	91	84.4	34.1	151	140.0	56.6	211	195.6	79.0	271	251.3	101.5
32	29.7	12.0	92	85.3	34.5	152	140.9	56.9	212	196.6	79.4	272	252.2	101.9
33	30.6	12.4	93	86.2	34.8	153	141.9	57.3	213	197.5	79.8	273	253.1	102.3
34	31.5	12.7	94	87.2	35.2	154	142.8	57.7	214	198.4	80.2	274	254.0	102.6
35	32.5	13.1	95	88.1	35.6	155	143.7	58.1	215	199.3	80.5	275	255.0	103.0
36	33.4	13.5	96	89.0	36.0	156	144.6	58.4	216	200.3	80.9	276	255.9	103.4
37	34.3	13.9	97	89.9	36.3	157	145.6	58.8	217	201.2	81.3	277	256.8	103.8
38	35.2	14.2	98	90.9	36.7	158	146.5	59.2	218	202.1	81.7	278	257.8	104.1
39	36.2	14.6	99	91.8	37.1	159	147.4	59.6	219	203.1	82.0	279	258.7	104.5
40	37.1	15.0	100	92.7	37.5	160	148.3	59.9	220	204.0	82.4	280	259.6	104.9
41	38.0	15.4	101	93.6	37.8	161	149.3	60.3	221	204.9	82.8	281	260.5	105.3
42	38.9	15.7	102	94.6	38.2	162	150.2	60.7	222	205.8	83.2	282	261.5	105.6
43	39.9	16.1	103	95.5	38.6	163	151.1	61.1	223	206.8	83.5	283	262.4	106.0
44	40.8	16.5	104	96.4	39.0	164	152.1	61.4	224	207.7	83.9	284	263.3	106.4
45	41.7	16.9	105	97.4	39.3	165	153.0	61.8	225	208.6	84.3	285	264.2	106.8
46	42.7	17.2	106	98.3	39.7	166	153.9	62.2	226	209.5	84.7	286	265.2	107.1
47	43.6	17.6	107	99.2	40.1	167	154.8	62.6	227	210.5	85.0	287	266.1	107.5
48	44.5	18.0	108	100.1	40.5	168	155.8	62.9	228	211.4	85.4	288	267.0	107.9
49	45.4	18.4	109	101.1	40.8	169	156.7	63.3	229	212.3	85.8	289	268.0	108.3
50	46.4	18.7	110	102.0	41.2	170	157.6	63.7	230	213.3	86.2	290	268.9	108.6
51	47.3	19.1	111	102.9	41.6	171	158.5	64.1	231	214.2	86.5	291	269.8	109.0
52	48.2	19.5	112	103.8	42.0	172	159.5	64.4	232	215.1	86.9	292	270.7	109.4
53	49.1	19.9	113	104.8	42.3	173	160.4	64.8	233	216.0	87.3	293	271.7	109.8
54	50.1	20.2	114	105.7	42.7	174	161.3	65.2	234	217.0	87.7	294	272.6	110.1
55	51.0	20.6	115	106.6	43.1	175	162.3	65.6	235	217.9	88.0	295	273.5	110.5
56	51.9	21.0	116	107.6	43.5	176	163.2	65.9	236	218.8	88.4	296	274.4	110.9
57	52.8	21.4	117	108.5	43.8	177	164.1	66.3	237	219.7	88.8	297	275.4	111.3
58	53.8	21.7	118	109.4	44.2	178	165.0	66.7	238	220.7	89.2	298	276.3	111.6
59	54.7	22.1	119	110.3	44.6	179	166.0	67.1	239	221.6	89.5	299	277.2	112.0
60	55.6	22.5	120	111.3	45.0	180	166.9	67.4	240	222.5	89.9	300	278.2	112.4
Lat.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

68 Degrees.

TABLE XIII.

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TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

23 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.4	61	56.2	23.8	121	111.4	47.3	181	166.6	70.7
2	1.8	0.8	62	57.1	24.2	122	112.3	47.7	182	167.5	71.1
3	2.8	1.2	63	58.0	24.6	123	113.2	48.1	183	168.5	71.5
4	3.7	1.6	64	58.9	25.0	124	114.1	48.5	184	169.4	71.9
5	4.6	2.0	65	59.8	25.4	125	115.1	48.8	185	170.3	72.3
6	5.5	2.3	66	60.8	25.8	126	116.0	49.2	186	171.2	72.7
7	6.4	2.7	67	61.7	26.2	127	116.9	49.6	187	172.1	73.1
8	7.4	3.1	68	62.6	26.6	128	117.8	50.0	188	173.1	73.5
9	8.3	3.5	69	63.5	27.0	129	118.7	50.4	189	174.0	73.8
10	9.2	3.9	70	64.4	27.4	130	119.7	50.8	190	174.9	74.2
11	10.1	4.3	71	65.4	27.7	131	120.6	51.2	191	175.8	74.6
12	11.0	4.7	72	66.3	28.1	132	121.5	51.6	192	176.7	75.0
13	12.0	5.1	73	67.2	28.5	133	122.4	52.0	193	177.7	75.4
14	12.9	5.5	74	68.1	28.9	134	123.3	52.4	194	178.6	75.8
15	13.8	5.9	75	69.0	29.3	135	124.3	52.7	195	179.5	76.2
16	14.7	6.3	76	70.0	29.7	136	125.2	53.1	196	180.4	76.6
17	15.6	6.6	77	70.9	30.1	137	126.1	53.5	197	181.3	77.0
18	16.6	7.0	78	71.8	30.5	138	127.0	53.9	198	182.3	77.4
19	17.5	7.4	79	72.7	30.9	139	128.0	54.3	199	183.2	77.8
20	18.4	7.8	80	73.6	31.3	140	128.9	54.7	200	184.1	78.1
21	19.3	8.2	81	74.6	31.6	141	129.8	55.1	201	185.0	78.5
22	20.3	8.6	82	75.5	32.0	142	130.7	55.5	202	185.9	78.9
23	21.2	9.0	83	76.4	32.4	143	131.6	55.9	203	186.9	79.3
24	22.1	9.4	84	77.3	32.8	144	132.6	56.3	204	187.8	79.7
25	23.0	9.8	85	78.2	33.2	145	133.5	56.7	205	188.7	80.1
26	23.9	10.2	86	79.2	33.6	146	134.4	57.0	206	189.6	80.5
27	24.9	10.5	87	80.1	34.0	147	135.3	57.4	207	190.5	80.9
28	25.8	10.9	88	81.0	34.4	148	136.2	57.8	208	191.5	81.3
29	26.7	11.3	89	81.9	34.8	149	137.2	58.2	209	192.4	81.7
30	27.6	11.7	90	82.8	35.2	150	138.1	58.6	210	193.3	82.1
31	28.5	12.1	91	83.8	35.6	151	139.0	59.0	211	194.2	82.4
32	29.5	12.5	92	84.7	35.9	152	139.9	59.4	212	195.1	82.8
33	30.4	12.9	93	85.6	36.3	153	140.8	59.8	213	196.1	83.2
34	31.3	13.3	94	86.5	36.7	154	141.8	60.2	214	197.0	83.6
35	32.2	13.7	95	87.4	37.1	155	142.7	60.6	215	197.9	84.0
36	33.1	14.1	96	88.4	37.5	156	143.6	61.0	216	198.8	84.4
37	34.1	14.5	97	89.3	37.9	157	144.5	61.3	217	199.7	84.8
38	35.0	14.8	98	90.2	38.3	158	145.4	61.7	218	200.7	85.2
39	35.9	15.2	99	91.1	38.7	159	146.4	62.1	219	201.6	85.6
40	36.8	15.6	100	92.1	39.1	160	147.3	62.5	220	202.5	86.0
41	37.7	16.0	101	93.0	39.5	161	148.2	62.9	221	203.4	86.4
42	38.7	16.4	102	93.9	39.9	162	149.1	63.3	222	204.4	86.7
43	39.6	16.8	103	94.8	40.2	163	150.0	63.7	223	205.3	87.1
44	40.5	17.2	104	95.7	40.6	164	151.0	64.1	224	206.2	87.5
45	41.4	17.6	105	96.7	41.0	165	151.9	64.5	225	207.1	87.9
46	42.3	18.0	106	97.6	41.4	166	152.8	64.9	226	208.0	88.3
47	43.3	18.4	107	98.5	41.8	167	153.7	65.3	227	209.0	88.7
48	44.2	18.8	108	99.4	42.2	168	154.6	65.6	228	209.9	89.1
49	45.1	19.1	109	100.3	42.6	169	155.6	66.0	229	210.8	89.5
50	46.0	19.5	110	101.3	43.0	170	156.5	66.4	230	211.7	89.9
51	46.9	19.9	111	102.2	43.4	171	157.4	66.8	231	212.6	90.3
52	47.9	20.3	112	103.1	43.8	172	158.3	67.2	232	213.6	90.6
53	48.8	20.7	113	104.0	44.2	173	159.2	67.6	233	214.5	91.0
54	49.7	21.1	114	104.9	44.5	174	160.2	68.0	234	215.4	91.4
55	50.6	21.5	115	105.9	44.9	175	161.1	68.4	235	216.3	91.8
56	51.5	21.9	116	106.8	45.3	176	162.0	68.8	236	217.2	92.2
57	52.5	22.3	117	107.7	45.7	177	162.9	69.2	237	218.2	92.6
58	53.4	22.7	118	108.6	46.1	178	163.8	69.6	238	219.1	93.0
59	54.3	23.1	119	109.5	46.5	179	164.8	69.9	239	220.0	93.4
60	55.2	23.4	120	110.5	46.9	180	165.7	70.3	240	220.9	93.8
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

67 Degrees.

TABLE XIII. TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

24 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.4	61	55.7	24.8	121	110.5	49.2	181	165.4	73.6	241	220.2	98.0
2	1.8	0.8	62	56.6	25.2	122	111.5	49.6	182	166.3	74.0	242	221.1	98.4
3	2.7	1.2	63	57.6	25.6	123	112.4	50.0	183	167.2	74.4	243	222.0	98.8
4	3.7	1.6	64	58.5	26.0	124	113.3	50.4	184	168.1	74.8	244	222.9	99.2
5	4.6	2.0	65	59.4	26.4	125	114.2	50.8	185	169.0	75.2	245	223.8	99.7
6	5.5	2.4	66	60.3	26.8	126	115.1	51.2	186	169.9	75.7	246	224.7	100.1
7	6.4	2.8	67	61.2	27.3	127	116.0	51.7	187	170.8	76.1	247	225.6	100.5
8	7.3	3.3	68	62.1	27.7	128	116.9	52.1	188	171.7	76.5	248	226.6	100.9
9	8.2	3.7	69	63.0	28.1	129	117.8	52.5	189	172.7	76.9	249	227.5	101.3
10	9.1	4.1	70	63.9	28.5	130	118.8	52.9	190	173.6	77.3	250	228.4	101.7
11	10.0	4.5	71	64.9	28.9	131	119.7	53.3	191	174.5	77.7	251	229.3	102.1
12	11.0	4.9	72	65.8	29.3	132	120.6	53.7	192	175.4	78.1	252	230.2	102.5
13	11.9	5.3	73	66.7	29.7	133	121.5	54.1	193	176.3	78.5	253	231.1	102.9
14	12.8	5.7	74	67.6	30.1	134	122.4	54.5	194	177.2	78.9	254	232.0	103.3
15	13.7	6.1	75	68.5	30.5	135	123.3	54.9	195	178.1	79.3	255	233.0	103.7
16	14.6	6.5	76	69.4	30.9	136	124.2	55.3	196	179.0	79.7	256	233.9	104.1
17	15.5	6.9	77	70.3	31.3	137	125.2	55.7	197	180.0	80.1	257	234.8	104.5
18	16.4	7.3	78	71.3	31.7	138	126.1	56.1	198	180.9	80.5	258	235.7	104.9
19	17.4	7.7	79	72.2	32.1	139	127.0	56.5	199	181.8	80.9	259	236.6	105.3
20	18.3	8.1	80	73.1	32.5	140	127.9	56.9	200	182.7	81.3	260	237.5	105.8
21	19.2	8.5	81	74.0	32.9	141	128.8	57.3	201	183.6	81.8	261	238.4	106.2
22	20.1	8.9	82	74.9	33.4	142	129.7	57.8	202	184.5	82.2	262	239.3	106.6
23	21.0	9.4	83	75.8	33.8	143	130.6	58.2	203	185.4	82.6	263	240.3	107.0
24	21.9	9.8	84	76.7	34.2	144	131.5	58.6	204	186.4	83.0	264	241.2	107.4
25	22.8	10.2	85	77.7	34.6	145	132.5	59.0	205	187.3	83.4	265	242.1	107.8
26	23.8	10.6	86	78.6	35.0	146	133.4	59.4	206	188.2	83.8	266	243.0	108.2
27	24.7	11.0	87	79.5	35.4	147	134.3	59.8	207	189.1	84.2	267	243.9	108.6
28	25.6	11.4	88	80.4	35.8	148	135.2	60.2	208	190.0	84.6	268	244.8	109.0
29	26.5	11.8	89	81.3	36.2	149	136.1	60.6	209	190.9	85.0	269	245.7	109.4
30	27.4	12.2	90	82.2	36.6	150	137.0	61.0	210	191.8	85.4	270	246.6	109.8
31	28.3	12.6	91	83.1	37.0	151	137.9	61.4	211	192.8	85.8	271	247.6	110.2
32	29.2	13.0	92	84.0	37.4	152	138.9	61.8	212	193.7	86.2	272	248.5	110.6
33	30.1	13.4	93	85.0	37.8	153	139.8	62.2	213	194.6	86.6	273	249.4	111.0
34	31.1	13.8	94	85.9	38.2	154	140.7	62.6	214	195.5	87.0	274	250.3	111.4
35	32.0	14.2	95	86.8	38.6	155	141.6	63.0	215	196.4	87.4	275	251.2	111.9
36	32.9	14.6	96	87.7	39.0	156	142.5	63.5	216	197.3	87.9	276	252.1	112.3
37	33.8	15.0	97	88.6	39.5	157	143.4	63.9	217	198.2	88.3	277	253.1	112.7
38	34.7	15.5	98	89.5	39.9	158	144.3	64.3	218	199.2	88.7	278	254.0	113.1
39	35.6	15.9	99	90.4	40.3	159	145.3	64.7	219	200.1	89.1	279	254.9	113.5
40	36.5	16.3	100	91.4	40.7	160	146.2	65.1	220	201.0	89.5	280	255.8	113.9
41	37.5	16.7	101	92.3	41.1	161	147.1	65.5	221	201.9	89.9	281	256.7	114.3
42	38.4	17.1	102	93.2	41.5	162	148.0	65.9	222	202.8	90.3	282	257.6	114.7
43	39.3	17.5	103	94.1	41.9	163	148.9	66.3	223	203.7	90.7	283	258.5	115.1
44	40.2	17.9	104	95.0	42.3	164	149.8	66.7	224	204.6	91.1	284	259.4	115.5
45	41.1	18.3	105	95.9	42.7	165	150.7	67.1	225	205.5	91.5	285	260.4	115.9
46	42.0	18.7	106	96.8	43.1	166	151.6	67.5	226	206.5	91.9	286	261.3	116.3
47	42.9	19.1	107	97.7	43.5	167	152.6	67.9	227	207.4	92.3	287	262.2	116.7
48	43.9	19.5	108	98.6	43.9	168	153.5	68.3	228	208.3	92.7	288	263.1	117.1
49	44.8	19.9	109	99.6	44.3	169	154.4	68.7	229	209.2	93.1	289	264.0	117.5
50	45.7	20.3	110	100.5	44.7	170	155.3	69.1	230	210.1	93.5	290	264.9	118.0
51	46.6	20.7	111	101.4	45.1	171	156.2	69.6	231	211.0	94.0	291	265.8	118.4
52	47.5	21.2	112	102.3	45.6	172	157.1	70.0	232	211.9	94.4	292	266.8	118.8
53	48.4	21.6	113	103.2	46.0	173	158.0	70.4	233	212.9	94.8	293	267.7	119.2
54	49.3	22.0	114	104.1	46.4	174	159.0	70.8	234	213.8	95.2	294	268.6	119.6
55	50.2	22.4	115	105.1	46.8	175	159.9	71.2	235	214.7	95.6	295	269.5	120.0
56	51.2	22.8	116	106.0	47.2	176	160.8	71.6	236	215.6	96.0	296	270.4	120.4
57	52.1	23.2	117	106.9	47.6	177	161.7	72.0	237	216.5	96.4	297	271.3	120.8
58	53.0	23.6	118	107.8	48.0	178	162.6	72.4	238	217.4	96.8	298	272.2	121.2
59	53.9	24.0	119	108.7	48.4	179	163.5	72.8	239	218.3	97.2	299	273.2	121.6
60	54.8	24.4	120	109.6	48.8	180	164.4	73.2	240	219.3	97.6	300	274.1	122.0
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

66 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

119

25 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.4	61	55.3	25.8	121	109.7	51.1	181	164.0	76.5	241	218.4	101.9
2	1.8	0.8	62	56.2	26.2	122	110.6	51.6	182	164.9	76.9	242	219.3	102.3
3	2.7	1.3	63	57.1	26.6	123	111.5	52.0	183	165.9	77.3	243	220.2	102.7
4	3.6	1.7	64	58.0	27.0	124	112.4	52.4	184	166.8	77.8	244	221.1	103.1
5	4.5	2.1	65	58.9	27.5	125	113.3	52.8	185	167.7	78.2	245	222.0	103.5
6	5.4	2.5	66	59.8	27.9	126	114.2	53.2	186	168.6	78.6	246	223.0	104.0
7	6.3	3.0	67	60.7	28.3	127	115.1	53.7	187	169.5	79.0	247	223.9	104.4
8	7.3	3.4	68	61.6	28.7	128	116.0	54.1	188	170.4	79.5	248	224.8	104.8
9	8.2	3.8	69	62.5	29.2	129	116.9	54.5	189	171.3	79.9	249	225.7	105.2
10	9.1	4.2	70	63.4	29.6	130	117.8	54.9	190	172.2	80.3	250	226.6	105.7
11	10.0	4.6	71	64.3	30.0	131	118.7	55.4	191	173.1	80.7	251	227.5	106.1
12	10.9	5.1	72	65.3	30.4	132	119.6	55.8	192	174.0	81.1	252	228.4	106.5
13	11.8	5.5	73	66.2	30.9	133	120.5	56.2	193	174.9	81.6	253	229.3	106.9
14	12.7	5.9	74	67.1	31.3	134	121.4	56.6	194	175.8	82.0	254	230.2	107.3
15	13.6	6.3	75	68.0	31.7	135	122.4	57.1	195	176.7	82.4	255	231.1	107.7
16	14.5	6.8	76	68.9	32.1	136	123.3	57.5	196	177.6	82.8	256	232.0	108.2
17	15.4	7.2	77	69.8	32.5	137	124.2	57.9	197	178.5	83.3	257	232.9	108.6
18	16.3	7.6	78	70.7	33.0	138	125.1	58.3	198	179.4	83.7	258	233.8	109.0
19	17.2	8.0	79	71.6	33.4	139	126.0	58.7	199	180.4	84.1	259	234.7	109.5
20	18.1	8.5	80	72.5	33.8	140	126.9	59.2	200	181.3	84.5	260	235.6	109.9
21	19.0	8.9	81	73.4	34.2	141	127.8	59.6	201	182.2	84.9	261	236.5	110.3
22	19.9	9.3	82	74.3	34.7	142	128.7	60.0	202	183.1	85.4	262	237.5	110.7
23	20.8	9.7	83	75.2	35.1	143	129.6	60.4	203	184.0	85.8	263	238.4	111.1
24	21.8	10.1	84	76.1	35.5	144	130.5	60.9	204	184.9	86.2	264	239.3	111.6
25	22.7	10.6	85	77.0	35.9	145	131.4	61.3	205	185.8	86.6	265	240.2	112.0
26	23.6	11.0	86	77.9	36.3	146	132.3	61.7	206	186.7	87.1	266	241.1	112.4
27	24.5	11.4	87	78.8	36.8	147	133.2	62.1	207	187.6	87.5	267	242.0	112.8
28	25.4	11.8	88	79.8	37.2	148	134.1	62.5	208	188.5	87.9	268	242.9	113.3
29	26.3	12.3	89	80.7	37.6	149	135.0	63.0	209	189.4	88.3	269	243.8	113.7
30	27.2	12.7	90	81.6	38.0	150	135.9	63.4	210	190.3	88.7	270	244.7	114.1
31	28.1	13.1	91	82.5	38.5	151	136.9	63.8	211	191.2	89.2	271	245.6	114.5
32	29.0	13.5	92	83.4	38.9	152	137.8	64.2	212	192.1	89.6	272	246.5	115.0
33	29.9	13.9	93	84.3	39.3	153	138.7	64.7	213	193.0	90.0	273	247.4	115.4
34	30.8	14.4	94	85.2	39.7	154	139.6	65.1	214	193.9	90.4	274	248.3	115.8
35	31.7	14.8	95	86.1	40.1	155	140.5	65.5	215	194.9	90.9	275	249.2	116.2
36	32.6	15.2	96	87.0	40.6	156	141.4	65.9	216	195.8	91.3	276	250.1	116.6
37	33.5	15.6	97	87.9	41.0	157	142.3	66.4	217	196.7	91.7	277	251.0	117.1
38	34.4	16.1	98	88.8	41.4	158	143.2	66.8	218	197.6	92.1	278	252.0	117.5
39	35.3	16.5	99	89.7	41.8	159	144.1	67.2	219	198.5	92.6	279	252.9	117.9
40	36.3	16.9	100	90.6	42.3	160	145.0	67.6	220	199.4	93.0	280	253.8	118.3
41	37.2	17.3	101	91.5	42.7	161	145.9	68.0	221	200.3	93.4	281	254.7	118.8
42	38.1	17.7	102	92.4	43.1	162	146.8	68.5	222	201.2	93.8	282	255.6	119.2
43	39.0	18.2	103	93.3	43.5	163	147.7	68.9	223	202.1	94.2	283	256.5	119.6
44	39.9	18.6	104	94.3	44.0	164	148.6	69.3	224	203.0	94.7	284	257.4	120.0
45	40.8	19.0	105	95.2	44.4	165	149.5	69.7	225	203.9	95.1	285	258.3	120.4
46	41.7	19.4	106	96.1	44.8	166	150.4	70.2	226	204.8	95.5	286	259.2	120.9
47	42.6	19.9	107	97.0	45.2	167	151.4	70.6	227	205.7	95.9	287	260.1	121.3
48	43.5	20.3	108	97.9	45.6	168	152.3	71.0	228	206.6	96.4	288	261.0	121.7
49	44.4	20.7	109	98.8	46.1	169	153.2	71.4	229	207.5	96.8	289	261.9	122.1
50	45.3	21.1	110	99.7	46.5	170	154.1	71.8	230	208.5	97.2	290	262.8	122.6
51	46.2	21.6	111	100.6	46.9	171	155.0	72.3	231	209.4	97.6	291	263.7	123.0
52	47.1	22.0	112	101.5	47.3	172	155.9	72.7	232	210.3	98.0	292	264.6	123.4
53	48.0	22.4	113	102.4	47.8	173	156.8	73.1	233	211.2	98.5	293	265.5	123.8
54	48.9	22.8	114	103.3	48.2	174	157.7	73.5	234	212.1	98.9	294	266.5	124.2
55	49.8	23.2	115	104.2	48.6	175	158.6	74.0	235	213.0	99.3	295	267.4	124.7
56	50.8	23.7	116	105.1	49.0	176	159.5	74.4	236	213.9	99.7	296	268.3	125.1
57	51.7	24.1	117	106.0	49.4	177	160.4	74.8	237	214.8	100.2	297	269.2	125.5
58	52.6	24.5	118	106.9	49.9	178	161.3	75.2	238	215.7	100.6	298	270.1	125.9
59	53.5	24.9	119	107.9	50.3	179	162.2	75.6	239	216.6	101.0	299	271.0	126.4
60	54.4	25.4	120	108.8	50.7	180	163.1	76.1	240	217.5	101.4	300	271.9	126.8
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

25 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

26 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.4	61	54.8	26.7	121	108.8	53.0	181	162.7	79.3	241	216.6	105.6
2	1.8	0.9	62	55.7	27.2	122	109.7	53.5	182	163.6	79.8	242	217.5	106.1
3	2.7	1.3	63	56.6	27.6	123	110.6	53.9	183	164.5	80.2	243	218.4	106.5
4	3.6	1.8	64	57.5	28.1	124	111.5	54.4	184	165.4	80.7	244	219.3	107.0
5	4.5	2.2	65	58.4	28.5	125	112.3	54.8	185	166.3	81.1	245	220.2	107.4
6	5.4	2.6	66	59.3	28.9	126	113.2	55.2	186	167.2	81.5	246	221.1	107.8
7	6.3	3.1	67	60.2	29.4	127	114.1	55.7	187	168.1	82.0	247	222.0	108.3
8	7.2	3.5	68	61.1	29.8	128	115.0	56.1	188	169.0	82.4	248	222.9	108.7
9	8.1	3.9	69	62.0	30.2	129	115.9	56.5	189	169.9	82.9	249	223.8	109.2
10	9.0	4.4	70	62.9	30.7	130	116.8	57.0	190	170.8	83.3	250	224.7	109.6
11	9.9	4.8	71	63.8	31.1	131	117.7	57.4	191	171.7	83.7	251	225.6	110.0
12	10.8	5.3	72	64.7	31.6	132	118.6	57.9	192	172.6	84.2	252	226.5	110.5
13	11.7	5.7	73	65.6	32.0	133	119.5	58.3	193	173.5	84.6	253	227.4	110.9
14	12.6	6.1	74	66.5	32.4	134	120.4	58.7	194	174.4	85.0	254	228.3	111.3
15	13.5	6.6	75	67.4	32.9	135	121.3	59.2	195	175.3	85.5	255	229.2	111.8
16	14.4	7.0	76	68.3	33.3	136	122.2	59.6	196	176.2	85.9	256	230.1	112.2
17	15.3	7.5	77	69.2	33.8	137	123.1	60.1	197	177.1	86.4	257	231.0	112.7
18	16.2	7.9	78	70.1	34.2	138	124.0	60.5	198	178.0	86.8	258	231.9	113.1
19	17.1	8.3	79	71.0	34.6	139	124.9	60.9	199	178.9	87.2	259	232.8	113.5
20	18.0	8.8	80	71.9	35.1	140	125.8	61.4	200	179.8	87.7	260	233.7	114.0
21	18.9	9.2	81	72.8	35.5	141	126.7	61.8	201	180.7	88.1	261	234.6	114.4
22	19.8	9.6	82	73.7	35.9	142	127.6	62.2	202	181.6	88.6	262	235.5	114.9
23	20.7	10.1	83	74.6	36.4	143	128.5	62.7	203	182.5	89.0	263	236.4	115.3
24	21.6	10.5	84	75.5	36.8	144	129.4	63.1	204	183.4	89.4	264	237.3	115.7
25	22.5	11.0	85	76.4	37.3	145	130.3	63.6	205	184.3	89.9	265	238.2	116.2
26	23.4	11.4	86	77.3	37.7	146	131.2	64.0	206	185.2	90.3	266	239.1	116.6
27	24.3	11.8	87	78.2	38.1	147	132.1	64.4	207	186.1	90.7	267	240.0	117.0
28	25.2	12.3	88	79.1	38.6	148	133.0	64.9	208	186.9	91.2	268	240.9	117.5
29	26.1	12.7	89	80.0	39.0	149	133.9	65.3	209	187.8	91.6	269	241.8	117.9
30	27.0	13.2	90	80.9	39.5	150	134.8	65.8	210	188.7	92.1	270	242.7	118.4
31	27.9	13.6	91	81.8	39.9	151	135.7	66.2	211	189.6	92.5	271	243.6	118.8
32	28.8	14.0	92	82.7	40.3	152	136.6	66.6	212	190.5	92.9	272	244.5	119.2
33	29.7	14.5	93	83.6	40.8	153	137.5	67.1	213	191.4	93.4	273	245.4	119.7
34	30.6	14.9	94	84.5	41.2	154	138.4	67.5	214	192.3	93.8	274	246.3	120.1
35	31.5	15.3	95	85.4	41.6	155	139.3	67.9	215	193.2	94.2	275	247.2	120.6
36	32.4	15.8	96	86.3	42.1	156	140.2	68.4	216	194.1	94.7	276	248.1	121.0
37	33.3	16.2	97	87.2	42.5	157	141.1	68.8	217	195.0	95.1	277	249.0	121.4
38	34.2	16.7	98	88.1	43.0	158	142.0	69.3	218	195.9	95.6	278	249.9	121.9
39	35.1	17.1	99	89.0	43.4	159	142.9	69.7	219	196.8	96.0	279	250.8	122.3
40	36.0	17.5	100	89.9	43.8	160	143.8	70.1	220	197.7	96.4	280	251.7	122.7
41	36.9	18.0	101	90.8	44.3	161	144.7	70.6	221	198.6	96.9	281	252.6	123.2
42	37.7	18.4	102	91.7	44.7	162	145.6	71.0	222	199.5	97.3	282	253.5	123.6
43	38.6	18.8	103	92.6	45.2	163	146.5	71.5	223	200.4	97.8	283	254.4	124.1
44	39.5	19.3	104	93.5	45.6	164	147.4	71.9	224	201.3	98.2	284	255.3	124.5
45	40.4	19.7	105	94.4	46.0	165	148.3	72.3	225	202.2	98.6	285	256.2	124.9
46	41.3	20.2	106	95.3	46.5	166	149.2	72.8	226	203.1	99.1	286	257.1	125.4
47	42.2	20.6	107	96.2	46.9	167	150.1	73.2	227	204.0	99.5	287	258.0	125.8
48	43.1	21.0	108	97.1	47.3	168	151.0	73.6	228	204.9	99.9	288	258.9	126.3
49	44.0	21.5	109	98.0	47.8	169	151.9	74.1	229	205.8	100.4	289	259.8	126.7
50	44.9	21.9	110	98.9	48.2	170	152.8	74.5	230	206.7	100.8	290	260.7	127.1
51	45.8	22.4	111	99.8	48.7	171	153.7	75.0	231	207.6	101.3	291	261.5	127.6
52	46.7	22.8	112	100.7	49.1	172	154.6	75.4	232	208.5	101.7	292	262.4	128.0
53	47.6	23.2	113	101.6	49.5	173	155.5	75.8	233	209.4	102.1	293	263.3	128.4
54	48.5	23.7	114	102.5	50.0	174	156.4	76.3	234	210.3	102.6	294	264.2	128.9
55	49.4	24.1	115	103.4	50.4	175	157.3	76.7	235	211.2	103.0	295	265.1	129.3
56	50.3	24.5	116	104.3	50.9	176	158.2	77.2	236	212.1	103.5	296	266.0	129.8
57	51.2	25.0	117	105.2	51.3	177	159.1	77.6	237	213.0	103.9	297	266.9	130.2
58	52.1	25.4	118	106.1	51.7	178	160.0	78.0	238	213.9	104.3	298	267.8	130.6
59	53.0	25.9	119	107.0	52.2	179	160.9	78.5	239	214.8	104.8	299	268.7	131.1
60	53.9	26.3	120	107.9	52.6	180	161.8	78.9	240	215.7	105.2	300	269.6	131.5
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

64 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

121

27 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.5	61	54.4	27.7	121	107.8	54.9	181	161.3	82.2	241	214.7	109.4
2	1.8	0.9	62	55.2	28.1	122	108.7	55.4	182	162.2	82.6	242	215.6	109.9
3	2.7	1.4	63	56.1	28.6	123	109.6	55.8	183	163.1	83.1	243	216.5	110.3
4	3.6	1.8	64	57.0	29.1	124	110.5	56.3	184	163.9	83.5	244	217.4	110.8
5	4.5	2.3	65	57.9	29.5	125	111.4	56.7	185	164.8	84.0	245	218.3	111.2
6	5.3	2.7	66	58.8	30.0	126	112.3	57.2	186	165.7	84.4	246	219.2	111.7
7	6.2	3.2	67	59.7	30.4	127	113.2	57.7	187	166.6	84.9	247	220.1	112.1
8	7.1	3.6	68	60.6	30.9	128	114.0	58.1	188	167.5	85.4	248	221.0	112.6
9	8.0	4.1	69	61.5	31.3	129	114.9	58.6	189	168.4	85.8	249	221.9	113.0
10	8.9	4.5	70	62.4	31.8	130	115.8	59.0	190	169.3	86.3	250	222.8	113.5
11	9.8	5.0	71	63.3	32.2	131	116.7	59.5	191	170.2	86.7	251	223.6	114.0
12	10.7	5.4	72	64.2	32.7	132	117.6	59.9	192	171.1	87.2	252	224.5	114.4
13	11.6	5.9	73	65.0	33.1	133	118.5	60.4	193	172.0	87.6	253	225.4	114.9
14	12.5	6.4	74	65.9	33.6	134	119.4	60.8	194	172.9	88.1	254	226.3	115.3
15	13.4	6.8	75	66.8	34.0	135	120.3	61.3	195	173.7	88.5	255	227.2	115.8
16	14.3	7.3	76	67.7	34.5	136	121.2	61.7	196	174.6	89.0	256	228.1	116.2
17	15.1	7.7	77	68.6	35.0	137	122.1	62.2	197	175.5	89.4	257	229.0	116.7
18	16.0	8.2	78	69.5	35.4	138	123.0	62.7	198	176.4	89.9	258	229.9	117.1
19	16.9	8.6	79	70.4	35.9	139	123.8	63.1	199	177.3	90.3	259	230.8	117.6
20	17.8	9.1	80	71.3	36.3	140	124.7	63.6	200	178.2	90.8	260	231.7	118.0
21	18.7	9.5	81	72.2	36.8	141	125.6	64.0	201	179.1	91.3	261	232.6	118.5
22	19.6	10.0	82	73.1	37.2	142	126.5	64.5	202	180.0	91.7	262	233.4	118.9
23	20.5	10.4	83	74.0	37.7	143	127.4	64.9	203	180.9	92.2	263	234.3	119.4
24	21.4	10.9	84	74.8	38.1	144	128.3	65.4	204	181.8	92.6	264	235.2	119.9
25	22.3	11.3	85	75.7	38.6	145	129.2	65.8	205	182.7	93.1	265	236.1	120.3
26	23.2	11.8	86	76.6	39.0	146	130.1	66.3	206	183.5	93.5	266	237.0	120.8
27	24.1	12.3	87	77.5	39.5	147	131.0	66.7	207	184.4	94.0	267	237.9	121.2
28	24.9	12.7	88	78.4	40.0	148	131.9	67.2	208	185.3	94.4	268	238.8	121.7
29	25.8	13.2	89	79.3	40.4	149	132.8	67.6	209	186.2	94.9	269	239.7	122.1
30	26.7	13.6	90	80.2	40.9	150	133.7	68.1	210	187.1	95.3	270	240.6	122.6
31	27.6	14.1	91	81.1	41.3	151	134.5	68.6	211	188.0	95.8	271	241.5	123.0
32	28.5	14.5	92	82.0	41.8	152	135.4	69.0	212	188.9	96.2	272	242.4	123.5
33	29.4	15.0	93	82.9	42.2	153	136.3	69.5	213	189.8	96.7	273	243.2	123.9
34	30.3	15.4	94	83.8	42.7	154	137.2	69.9	214	190.7	97.2	274	244.1	124.4
35	31.2	15.9	95	84.6	43.1	155	138.1	70.4	215	191.6	97.6	275	245.0	124.8
36	32.1	16.3	96	85.5	43.6	156	139.0	70.8	216	192.5	98.1	276	245.9	125.3
37	33.0	16.8	97	86.4	44.0	157	139.9	71.3	217	193.3	98.5	277	246.8	125.8
38	33.9	17.3	98	87.3	44.5	158	140.8	71.7	218	194.2	99.0	278	247.7	126.2
39	34.7	17.7	99	88.2	44.9	159	141.7	72.2	219	195.1	99.4	279	248.6	126.7
40	35.6	18.2	100	89.1	45.4	160	142.6	72.6	220	196.0	99.9	280	249.5	127.1
41	36.5	18.6	101	90.0	45.9	161	143.5	73.1	221	196.9	100.3	281	250.4	127.6
42	37.4	19.1	102	90.9	46.3	162	144.3	73.5	222	197.8	100.8	282	251.3	128.0
43	38.3	19.5	103	91.8	46.8	163	145.2	74.0	223	198.7	101.2	283	252.2	128.5
44	39.2	20.0	104	92.7	47.2	164	146.1	74.5	224	199.6	101.7	284	253.0	128.9
45	40.1	20.4	105	93.6	47.7	165	147.0	74.9	225	200.5	102.1	285	253.9	129.4
46	41.0	20.9	106	94.4	48.1	166	147.9	75.4	226	201.4	102.6	286	254.8	129.8
47	41.9	21.3	107	95.3	48.6	167	148.8	75.8	227	202.3	103.1	287	255.7	130.3
48	42.8	21.8	108	96.2	49.0	168	149.7	76.3	228	203.1	103.5	288	256.6	130.7
49	43.7	22.2	109	97.1	49.5	169	150.6	76.7	229	204.0	104.0	289	257.5	131.2
50	44.6	22.7	110	98.0	49.9	170	151.5	77.2	230	204.9	104.4	290	258.4	131.7
51	45.4	23.2	111	98.9	50.4	171	152.4	77.6	231	205.8	104.9	291	259.3	132.1
52	46.3	23.6	112	99.8	50.8	172	153.3	78.1	232	206.7	105.3	292	260.2	132.6
53	47.2	24.1	113	100.7	51.3	173	154.1	78.5	233	207.6	105.8	293	261.1	133.0
54	48.1	24.5	114	101.6	51.8	174	155.0	79.0	234	208.5	106.2	294	262.0	133.5
55	49.0	25.0	115	102.5	52.2	175	155.9	79.4	235	209.4	106.7	295	262.8	133.9
56	49.9	25.4	116	103.4	52.7	176	156.8	79.9	236	210.3	107.1	296	263.7	134.4
57	50.8	25.9	117	104.2	53.1	177	157.7	80.4	237	211.2	107.6	297	264.6	134.8
58	51.7	26.3	118	105.1	53.6	178	158.6	80.8	238	212.1	108.0	298	265.5	135.3
59	52.6	26.8	119	106.0	54.0	179	159.5	81.3	239	213.0	108.5	299	266.4	135.7
60	53.5	27.2	120	106.9	54.5	180	160.4	81.7	240	213.8	109.0	300	267.3	136.2
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

63 Degrees.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

28 Degrees.											
Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.5	61	53.9	28.6	121	106.8	56.8	181	159.8	85.0
2	1.8	0.9	62	54.7	29.1	122	107.7	57.3	182	160.7	85.4
3	2.6	1.4	63	55.6	29.6	123	108.6	57.7	183	161.6	85.9
4	3.5	1.9	64	56.5	30.0	124	109.5	58.2	184	162.5	86.4
5	4.4	2.3	65	57.4	30.5	125	110.4	58.7	185	163.3	86.9
6	5.3	2.8	66	58.3	31.0	126	111.3	59.2	186	164.2	87.3
7	6.2	3.3	67	59.2	31.5	127	112.1	59.6	187	165.1	87.8
8	7.1	3.8	68	60.0	31.9	128	113.0	60.1	188	166.0	88.3
9	7.9	4.2	69	60.9	32.4	129	113.9	60.6	189	166.9	88.7
10	8.8	4.7	70	61.8	32.9	130	114.8	61.0	190	167.8	89.2
11	9.7	5.2	71	62.7	33.3	131	115.7	61.5	191	168.6	89.7
12	10.6	5.6	72	63.6	33.8	132	116.5	62.0	192	169.5	90.1
13	11.5	6.1	73	64.5	34.3	133	117.4	62.4	193	170.4	90.6
14	12.4	6.6	74	65.3	34.7	134	118.3	62.9	194	171.3	91.1
15	13.2	7.0	75	66.2	35.2	135	119.2	63.4	195	172.2	91.5
16	14.1	7.5	76	67.1	35.7	136	120.1	63.8	196	173.1	92.0
17	15.0	8.0	77	68.0	36.1	137	121.0	64.3	197	173.9	92.5
18	15.9	8.5	78	68.9	36.6	138	121.8	64.8	198	174.8	93.0
19	16.8	8.9	79	69.8	37.1	139	122.7	65.3	199	175.7	93.4
20	17.7	9.4	80	70.7	37.6	140	123.6	65.7	200	176.6	93.9
21	18.5	9.9	81	71.5	38.0	141	124.5	66.2	201	177.5	94.4
22	19.4	10.3	82	72.4	38.5	142	125.4	66.7	202	178.4	94.8
23	20.3	10.8	83	73.3	39.0	143	126.3	67.1	203	179.2	95.3
24	21.2	11.3	84	74.2	39.4	144	127.1	67.6	204	180.1	95.8
25	22.1	11.7	85	75.1	39.9	145	128.0	68.1	205	181.0	96.2
26	23.0	12.2	86	75.9	40.4	146	128.9	68.5	206	181.9	96.7
27	23.8	12.7	87	76.8	40.8	147	129.8	69.0	207	182.8	97.2
28	24.7	13.1	88	77.7	41.3	148	130.7	69.5	208	183.7	97.7
29	25.6	13.6	89	78.6	41.8	149	131.6	70.0	209	184.5	98.1
30	26.5	14.1	90	79.5	42.3	150	132.4	70.4	210	185.4	98.6
31	27.4	14.6	91	80.3	42.7	151	133.3	70.9	211	186.3	99.1
32	28.3	15.0	92	81.2	43.2	152	134.2	71.4	212	187.2	99.5
33	29.1	15.5	93	82.1	43.7	153	135.1	71.8	213	188.1	100.0
34	30.0	16.0	94	83.0	44.1	154	136.0	72.3	214	189.0	100.5
35	30.9	16.4	95	83.9	44.6	155	136.9	72.8	215	189.8	100.9
36	31.8	16.9	96	84.8	45.1	156	137.7	73.2	216	190.7	101.4
37	32.7	17.4	97	85.6	45.5	157	138.6	73.7	217	191.6	101.9
38	33.6	17.8	98	86.5	46.0	158	139.5	74.2	218	192.5	102.3
39	34.4	18.3	99	87.4	46.5	159	140.4	74.6	219	193.4	102.8
40	35.3	18.8	100	88.3	46.9	160	141.3	75.1	220	194.2	103.3
41	36.2	19.2	101	89.2	47.4	161	142.2	75.6	221	195.1	103.8
42	37.1	19.7	102	90.1	47.9	162	143.0	76.1	222	196.0	104.2
43	38.0	20.2	103	90.9	48.4	163	143.9	76.5	223	196.9	104.7
44	38.8	20.7	104	91.8	48.8	164	144.8	77.0	224	197.8	105.2
45	39.7	21.1	105	92.7	49.3	165	145.7	77.5	225	198.7	105.6
46	40.6	21.6	106	93.6	49.8	166	146.6	77.9	226	199.5	106.1
47	41.5	22.1	107	94.5	50.2	167	147.5	78.4	227	200.4	106.6
48	42.4	22.5	108	95.4	50.7	168	148.3	78.9	228	201.3	107.0
49	43.3	23.0	109	96.2	51.2	169	149.2	79.3	229	202.2	107.5
50	44.1	23.5	110	97.1	51.6	170	150.1	79.8	230	203.1	108.0
51	45.0	23.9	111	98.0	52.1	171	151.0	80.3	231	204.0	108.4
52	45.9	24.4	112	98.9	52.6	172	151.9	80.7	232	204.8	108.9
53	46.8	24.9	113	99.8	53.1	173	152.7	81.2	233	205.7	109.4
54	47.7	25.4	114	100.7	53.5	174	153.6	81.7	234	206.6	109.9
55	48.6	25.8	115	101.5	54.0	175	154.5	82.2	235	207.5	110.3
56	49.4	26.3	116	102.4	54.5	176	155.4	82.6	236	208.4	110.8
57	50.3	26.8	117	103.3	54.9	177	156.3	83.1	237	209.3	111.3
58	51.2	27.2	118	104.2	55.4	178	157.2	83.6	238	210.1	111.7
59	52.1	27.7	119	105.1	55.9	179	158.0	84.0	239	211.0	112.2
60	53.0	28.2	120	106.0	56.3	180	158.9	84.5	240	211.9	112.7
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

62 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

123

29 Degrees.											
Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.5	61	53.4	29.6	121	105.8	58.7	181	158.3	87.8
2	1.7	1.0	62	54.2	30.1	122	106.7	59.1	182	159.2	88.2
3	2.6	1.5	63	55.1	30.5	123	107.6	59.6	183	160.1	88.7
4	3.5	1.9	64	56.0	31.0	124	108.5	60.1	184	160.9	89.2
5	4.4	2.4	65	56.9	31.5	125	109.3	60.6	185	161.8	89.7
6	5.2	2.9	66	57.7	32.0	126	110.2	61.1	186	162.7	90.2
7	6.1	3.4	67	58.6	32.5	127	111.1	61.6	187	163.6	90.7
8	7.0	3.9	68	59.5	33.0	128	112.0	62.1	188	164.4	91.1
9	7.9	4.4	69	60.3	33.5	129	112.8	62.5	189	165.3	91.6
10	8.7	4.8	70	61.2	33.9	130	113.7	63.0	190	166.2	92.1
11	9.6	5.3	71	62.1	34.4	131	114.6	63.5	191	167.1	92.6
12	10.5	5.8	72	63.0	34.9	132	115.4	64.0	192	167.9	93.1
13	11.4	6.3	73	63.8	35.4	133	116.3	64.5	193	168.8	93.6
14	12.2	6.8	74	64.7	35.9	134	117.2	65.0	194	169.7	94.1
15	13.1	7.3	75	65.6	36.4	135	118.1	65.5	195	170.6	94.5
16	14.0	7.8	76	66.5	36.8	136	118.9	65.9	196	171.4	95.0
17	14.9	8.2	77	67.3	37.3	137	119.8	66.4	197	172.3	95.5
18	15.7	8.7	78	68.2	37.8	138	120.7	66.9	198	173.2	96.0
19	16.6	9.2	79	69.1	38.3	139	121.6	67.4	199	174.0	96.5
20	17.5	9.7	80	70.0	38.8	140	122.4	67.9	200	174.9	97.0
21	18.4	10.2	81	70.8	39.3	141	123.3	68.4	201	175.8	97.4
22	19.2	10.7	82	71.7	39.8	142	124.2	68.8	202	176.7	97.9
23	20.1	11.2	83	72.6	40.2	143	125.1	69.3	203	177.5	98.4
24	21.0	11.6	84	73.5	40.7	144	125.9	69.8	204	178.4	98.9
25	21.9	12.1	85	74.3	41.2	145	126.8	70.3	205	179.3	99.4
26	22.7	12.6	86	75.2	41.7	146	127.7	70.8	206	180.2	99.9
27	23.6	13.1	87	76.1	42.2	147	128.6	71.3	207	181.0	100.4
28	24.5	13.6	88	77.0	42.7	148	129.4	71.8	208	181.9	100.8
29	25.4	14.1	89	77.8	43.1	149	130.3	72.2	209	182.8	101.3
30	26.2	14.5	90	78.7	43.6	150	131.2	72.7	210	183.7	101.8
31	27.1	15.0	91	79.6	44.1	151	132.1	73.2	211	184.5	102.3
32	28.0	15.5	92	80.5	44.6	152	132.9	73.7	212	185.4	102.8
33	28.9	16.0	93	81.3	45.1	153	133.8	74.2	213	186.3	103.3
34	29.7	16.5	94	82.2	45.6	154	134.7	74.7	214	187.2	103.7
35	30.6	17.0	95	83.1	46.1	155	135.6	75.1	215	188.0	104.2
36	31.5	17.5	96	84.0	46.5	156	136.4	75.6	216	188.9	104.7
37	32.4	17.9	97	84.8	47.0	157	137.3	76.1	217	189.8	105.2
38	33.2	18.4	98	85.7	47.5	158	138.2	76.6	218	190.7	105.7
39	34.1	18.9	99	86.6	48.0	159	139.1	77.1	219	191.5	106.2
40	35.0	19.4	100	87.5	48.5	160	139.9	77.6	220	192.4	106.7
41	35.9	19.9	101	88.3	49.0	161	140.8	78.1	221	193.3	107.1
42	36.7	20.4	102	89.2	49.5	162	141.7	78.5	222	194.2	107.6
43	37.6	20.8	103	90.1	49.9	163	142.6	79.0	223	195.0	108.1
44	38.5	21.3	104	91.0	50.4	164	143.4	79.5	224	195.9	108.6
45	39.4	21.8	105	91.8	50.9	165	144.3	80.0	225	196.8	109.1
46	40.2	22.3	106	92.7	51.4	166	145.2	80.5	226	197.7	109.6
47	41.1	22.8	107	93.6	51.9	167	146.1	81.0	227	198.5	110.1
48	42.0	23.3	108	94.5	52.4	168	146.9	81.4	228	199.4	110.5
49	42.9	23.8	109	95.3	52.8	169	147.8	81.9	229	200.3	111.0
50	43.7	24.2	110	96.2	53.3	170	148.7	82.4	230	201.2	111.5
51	44.6	24.7	111	97.1	53.8	171	149.6	82.9	231	202.0	112.0
52	45.5	25.2	112	98.0	54.3	172	150.4	83.4	232	202.9	112.5
53	46.4	25.7	113	98.8	54.8	173	151.3	83.9	233	203.8	113.0
54	47.2	26.2	114	99.7	55.3	174	152.2	84.4	234	204.7	113.4
55	48.1	26.7	115	100.6	55.8	175	153.1	84.8	235	205.5	113.9
56	49.0	27.1	116	101.5	56.2	176	153.9	85.3	236	206.4	114.4
57	49.9	27.6	117	102.3	56.7	177	154.8	85.8	237	207.3	114.9
58	50.7	28.1	118	103.2	57.2	178	155.7	86.3	238	208.2	115.4
59	51.6	28.6	119	104.1	57.7	179	156.6	86.8	239	209.0	115.9
60	52.5	29.1	120	105.0	58.2	180	157.4	87.3	240	209.9	116.4
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

61 Degrees.

TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

30 Degrees.

Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.	Dist.	D.Lat.	Dep.
1	0.9	0.5	61	52.8	30.5	121	104.8	60.5	181	156.8	90.5	241	208.7	120.5
2	1.7	1.0	62	53.7	31.0	122	105.7	61.0	182	157.6	91.0	242	209.6	121.0
3	2.6	1.5	63	54.6	31.5	123	106.5	61.5	183	158.5	91.5	243	210.4	121.5
4	3.5	2.0	64	55.4	32.0	124	107.4	62.0	184	159.3	92.0	244	211.3	122.0
5	4.3	2.5	65	56.3	32.5	125	108.3	62.5	185	160.2	92.5	245	212.2	122.5
6	5.2	3.0	66	57.2	33.0	126	109.1	63.0	186	161.1	93.0	246	213.0	123.0
7	6.1	3.5	67	58.0	33.5	127	110.0	63.5	187	161.9	93.5	247	213.9	123.5
8	6.9	4.0	68	58.9	34.0	128	110.9	64.0	188	162.8	94.0	248	214.8	124.0
9	7.8	4.5	69	59.8	34.5	129	111.7	64.5	189	163.7	94.5	249	215.6	124.5
10	8.7	5.0	70	60.6	35.0	130	112.6	65.0	190	164.5	95.0	250	216.5	125.0
11	9.5	5.5	71	61.5	35.5	131	113.4	65.5	191	165.4	95.5	251	217.4	125.5
12	10.4	6.0	72	62.4	36.0	132	114.3	66.0	192	166.3	96.0	252	218.2	126.0
13	11.3	6.5	73	63.2	36.5	133	115.2	66.5	193	167.1	96.5	253	219.1	126.5
14	12.1	7.0	74	64.1	37.0	134	116.0	67.0	194	168.0	97.0	254	220.0	127.0
15	13.0	7.5	75	65.0	37.5	135	116.9	67.5	195	168.9	97.5	255	220.8	127.5
16	13.9	8.0	76	65.8	38.0	136	117.8	68.0	196	169.7	98.0	256	221.7	128.0
17	14.7	8.5	77	66.7	38.5	137	118.6	68.5	197	170.6	98.5	257	222.6	128.5
18	15.6	9.0	78	67.5	39.0	138	119.5	69.0	198	171.5	99.0	258	223.4	129.0
19	16.5	9.5	79	68.4	39.5	139	120.4	69.5	199	172.3	99.5	259	224.3	129.5
20	17.3	10.0	80	69.3	40.0	140	121.2	70.0	200	173.2	100.0	260	225.2	130.0
21	18.2	10.5	81	70.1	40.5	141	122.1	70.5	201	174.1	100.5	261	226.0	130.5
22	19.1	11.0	82	71.0	41.0	142	123.0	71.0	202	174.9	101.0	262	226.9	131.0
23	19.9	11.5	83	71.9	41.5	143	123.8	71.5	203	175.8	101.5	263	227.8	131.5
24	20.8	12.0	84	72.7	42.0	144	124.7	72.0	204	176.7	102.0	264	228.6	132.0
25	21.7	12.5	85	73.6	42.5	145	125.6	72.5	205	177.5	102.5	265	229.5	132.5
26	22.5	13.0	86	74.5	43.0	146	126.4	73.0	206	178.4	103.0	266	230.4	133.0
27	23.4	13.5	87	75.3	43.5	147	127.3	73.5	207	179.3	103.5	267	231.2	133.5
28	24.2	14.0	88	76.2	44.0	148	128.2	74.0	208	180.1	104.0	268	232.1	134.0
29	25.1	14.5	89	77.1	44.5	149	129.0	74.5	209	181.0	104.5	269	233.0	134.5
30	26.0	15.0	90	77.9	45.0	150	129.9	75.0	210	181.9	105.0	270	233.8	135.0
31	26.8	15.5	91	78.8	45.5	151	130.8	75.5	211	182.7	105.5	271	234.7	135.5
32	27.7	16.0	92	79.7	46.0	152	131.6	76.0	212	183.6	106.0	272	235.6	136.0
33	28.6	16.5	93	80.5	46.5	153	132.5	76.5	213	184.5	106.5	273	236.4	136.5
34	29.4	17.0	94	81.4	47.0	154	133.4	77.0	214	185.3	107.0	274	237.3	137.0
35	30.3	17.5	95	82.3	47.5	155	134.2	77.5	215	186.2	107.5	275	238.2	137.5
36	31.2	18.0	96	83.1	48.0	156	135.1	78.0	216	187.1	108.0	276	239.0	138.0
37	32.0	18.5	97	84.0	48.5	157	136.0	78.5	217	187.9	108.5	277	239.9	138.5
38	32.9	19.0	98	84.9	49.0	158	136.8	79.0	218	188.8	109.0	278	240.8	139.0
39	33.8	19.5	99	85.7	49.5	159	137.7	79.5	219	189.7	109.5	279	241.6	139.5
40	34.6	20.0	100	86.6	50.0	160	138.6	80.0	220	190.5	110.0	280	242.5	140.0
41	35.5	20.5	101	87.5	50.5	161	139.4	80.5	221	191.4	110.5	281	243.4	140.5
42	36.4	21.0	102	88.3	51.0	162	140.3	81.0	222	192.3	111.0	282	244.2	141.0
43	37.2	21.5	103	89.2	51.5	163	141.2	81.5	223	193.1	111.5	283	245.1	141.5
44	38.1	22.0	104	90.1	52.0	164	142.0	82.0	224	194.0	112.0	284	246.0	142.0
45	39.0	22.5	105	90.9	52.5	165	142.9	82.5	225	194.9	112.5	285	246.8	142.5
46	39.8	23.0	106	91.8	53.0	166	143.8	83.0	226	195.7	113.0	286	247.7	143.0
47	40.7	23.5	107	92.7	53.5	167	144.6	83.5	227	196.6	113.5	287	248.5	143.5
48	41.6	24.0	108	93.5	54.0	168	145.5	84.0	228	197.5	114.0	288	249.4	144.0
49	42.4	24.5	109	94.4	54.5	169	146.4	84.5	229	198.3	114.5	289	250.3	144.5
50	43.3	25.0	110	95.3	55.0	170	147.2	85.0	230	199.2	115.0	290	251.1	145.0
51	44.2	25.5	111	96.1	55.5	171	148.1	85.5	231	200.1	115.5	291	252.0	145.5
52	45.0	26.0	112	97.0	56.0	172	149.0	86.0	232	200.9	116.0	292	252.9	146.0
53	45.9	26.5	113	97.9	56.5	173	149.8	86.5	233	201.8	116.5	293	253.7	146.5
54	46.8	27.0	114	98.7	57.0	174	150.7	87.0	234	202.6	117.0	294	254.6	147.0
55	47.6	27.5	115	99.6	57.5	175	151.6	87.5	235	203.5	117.5	295	255.5	147.5
56	48.5	28.0	116	100.5	58.0	176	152.4	88.0	236	204.4	118.0	296	256.3	148.0
57	49.4	28.5	117	101.3	58.5	177	153.3	88.5	237	205.2	118.5	297	257.2	148.5
58	50.2	29.0	118	102.2	59.0	178	154.2	89.0	238	206.1	119.0	298	258.1	149.0
59	51.1	29.5	119	103.1	59.5	179	155.0	89.5	239	207.0	119.5	299	258.9	149.5
60	52.0	30.0	120	103.9	60.0	180	155.9	90.0	240	207.8	120.0	300	259.8	150.0
Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.	Dist.	Dep.	D.Lat.

60 Degrees.

TABLE XIII.
TRAVERSE TABLE, TO EACH DEGREE OF THE QUADRANT.

125

31 Degrees.

Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.	Dist.	D.Lat	Dep.
1	0.9	0.5	61	52.3	31.4	121	103.7	62.3	181	155.1	93.2	241	206.6	124.1
2	1.7	1.0	62	53.1	31.9	122	104.6	62.8	182	156.0	93.7	242	207.4	124.6
3	2.6	1.5	63	54.0	32.4	123	105.4	63.3	183	156.9	94.3	243	208.3	125.2
4	3.4	2.1	64	54.9	33.0	124	106.3	63.9	184	157.7	94.8	244	209.1	125.7
5	4.3	2.6	65	55.7	33.5	125	107.1	64.4	185	158.6	95.3	245	210.0	126.2
6	5.1	3.1	66	56.6	34.0	126	108.0	64.9	186	159.4	95.8	246	210.9	126.7
7	6.0	3.6	67	57.4	34.5	127	108.9	65.4	187	160.3	96.3	247	211.7	127.2
8	6.9	4.1	68	58.3	35.0	128	109.7	65.9	188	161.1	96.8	248	212.6	127.7
9	7.7	4.6	69	59.1	35.5	129	110.6	66.4	189	162.0	97.3	249	213.4	128.2
10	8.6	5.2	70	60.0	36.1	130	111.4	67.0	190	162.9	97.9	250	214.3	128.8
11	9.4	5.7	71	60.9	36.6	131	112.3	67.5	191	163.7	98.4	251	215.1	129.3
12	10.3	6.2	72	61.7	37.1	132	113.1	68.0	192	164.6	98.9	252	216.0	129.8
13	11.1	6.7	73	62.6	37.6	133	114.0	68.5	193	165.4	99.4	253	216.9	130.3
14	12.0	7.2	74	63.4	38.1	134	114.9	69.0	194	166.3	99.9	254	217.7	130.8
15	12.9	7.7	75	64.3	38.6	135	115.7	69.5	195	167.1	100.4	255	218.6	131.3
16	13.7	8.2	76	65.1	39.1	136	116.6	70.0	196	168.0	100.9	256	219.4	131.8
17	14.6	8.8	77	66.0	39.7	137	117.4	70.6	197	168.9	101.5	257	220.3	132.4
18	15.4	9.3	78	66.9	40.2	138	118.3	71.1	198	169.7	102.0	258	221.1	132.9
19	16.3	9.8	79	67.7	40.7	139	119.1	71.6	199	170.6	102.5	259	222.0	133.4
20	17.1	10.3	80	68.6	41.2	140	120.0	72.1	200	171.4	103.0	260	222.9	133.9
21	18.0	10.8	81	69.4	41.7	141	120.9	72.6	201	172.3	103.5	261	223.7	134.4
22	18.9	11.3	82	70.3	42.2	142	121.7	73.1	202	173.1	104.0	262	224.6	134.9
23	19.7	11.8	83	71.1	42.7	143	122.6	73.7	203	174.0	104.6	263	225.4	135.5
24	20.6	12.4	84	72.0	43.3	144	123.4	74.2	204	174.9	105.1	264	226.3	136.0
25	21.4	12.9	85	72.9	43.8	145	124.3	74.7	205	175.7	105.6	265	227.1	136.5
26	22.3	13.4	86	73.7	44.3	146	125.1	75.2	206	176.6	106.1	266	228.0	137.0
27	23.1	13.9	87	74.6	44.8	147	126.0	75.7	207	177.4	106.6	267	228.9	137.5
28	24.0	14.4	88	75.4	45.3	148	126.9	76.2	208	178.3	107.1	268	229.7	138.0
29	24.9	14.6	89	76.3	45.8	149	127.7	76.7	209	179.1	107.6	269	230.6	138.5
30	25.7	15.5	90	77.1	46.4	150	128.6	77.3	210	180.0	108.2	270	231.4	139.1
31	26.6	16.0	91	78.0	46.9	151	129.4	77.8	211	180.9	108.7	271	232.3	139.6
32	27.4	16.5	92	78.9	47.4	152	130.3	78.3	212	181.7	109.2	272	233.1	140.1
33	28.3	17.0	93	79.7	47.9	153	131.1	78.8	213	182.6	109.7	273	234.0	140.6
34	29.1	17.5	94	80.6	48.4	154	132.0	79.3	214	183.4	110.2	274	234.9	141.1
35	30.0	18.0	95	81.4	48.9	155	132.9	79.8	215	184.3	110.7	275	235.7	141.6
36	30.9	18.5	96	82.3	49.4	156	133.7	80.3	216	185.1	111.2	276	236.6	142.2
37	31.7	19.1	97	83.1	50.0	157	134.6	80.9	217	186.0	111.8	277	237.4	142.7
38	32.6	19.6	98	84.0	50.5	158	135.4	81.4	218	186.9	112.3	278	238.3	143.2
39	33.4	20.1	99	84.9	51.0	159	136.3	81.9	219	187.7	112.8	279	239.1	143.7
40	34.3	20.6	100	85.7	51.5	160	137.1	82.4	220	188.6	113.3	280	240.0	144.2
41	35.1	21.1	101	86.6	52.0	161	138.0	82.9	221	189.4	113.8	281	240.9	144.7
42	36.0	21.6	102	87.4	52.5	162	138.9	83.4	222	190.3	114.3	282	241.7	145.2
43	36.9	22.1	103	88.3	53.0	163	139.7	84.0	223	191.1	114.9	283	242.6	145.8
44	37.7	22.7	104	89.1	53.6	164	140.6	84.5	224	192.0	115.4	284	243.4	146.3
45	38.6	23.2	105	90.0	54.1	165	141.4	85.0	225	192.9	115.9	285	244.3	146.8
46	39.4	23.7	106	90.9	54.6	166	142.3	85.5	226	193.7	116.4	286	245.1	147.3
47	40.3	24.2	107	91.7	55.1	167	143.1	86.0	227	194.6	116.9	287	246.0	147.8
48	41.1	24.7	108	92.6	55.6	168	144.0	86.5	228	195.4	117.4	288	246.9	148.3
49	42.0	25.2	109	93.4	56.1	169	144.9	87.0	229	196.3	117.9	289	247.7	148.8
50	42.9	25.8	110	94.3	56.7	170	145.7	87.6	230	197.1	118.5	290	248.6	149.4
51	43.7	26.3	111	95.1	57.2	171	146.6	88.1	231	198.0	119.0	291	249.4	149.9
52	44.6	26.8	112	96.0	57.7	172	147.4	88.6	232	198.9	119.5	292	250.3	150.4
53	45.4	27.3	113	96.9	58.2	173	148.3	89.1	233	199.7	120.0	293	251.2	150.9
54	46.3	27.8	114	97.7	58.7	174	149.1	89.6	234	200.6	120.5	294	252.0	151.4
55	47.1	28.3	115	98.6	59.2	175	150.0	90.1	235	201.4	121.0	295	252.9	151.9
56	48.0	28.8	116	99.4	59.7	176	150.9	90.6	236	202.3	121.5	296	253.7	152.5
57	48.9	29.4	117	100.3	60.3	177	151.7	91.2	237	203.1	122.1	297	254.6	153.0
58	49.7	29.9	118	101.1	60.8	178	152.6	91.7	238	204.0	122.6	298	255.4	153.5
59	50.6	30.4	119	102.0	61.3	179	153.4	92.2	239	204.9	123.1	299	256.3	154.0
60	51.4	30.9	120	102.9	61.8	180	154.3	92.7	240	205.7	123.6	300	257.1	154.5
Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat	Dist.	Dep.	D.Lat

59 Degrees.

MERIDIONAL PARTS.

M.	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	41°	M.
0	1751	1819	1888	1958	2028	2100	2171	2244	2318	2393	2468	2545	2623	2702	0
1	1752	1821	1890	1960	2030	2101	2173	2246	2319	2394	2470	2546	2624	2703	1
2	1753	1822	1891	1960	2031	2102	2174	2247	2320	2395	2471	2548	2625	2704	2
3	1755	1823	1892	1962	2032	2103	2175	2248	2322	2396	2472	2549	2627	2706	3
4	1756	1824	1893	1963	2033	2104	2176	2249	2323	2398	2473	2550	2628	2707	4
5	1757	1825	1894	1964	2034	2105	2178	2250	2324	2399	2475	2551	2629	2708	5
6	1758	1826	1895	1965	2035	2107	2179	2252	2325	2400	2476	2553	2631	2710	6
7	1759	1827	1896	1966	2037	2108	2180	2253	2327	2401	2477	2554	2632	2711	7
8	1760	1829	1898	1967	2038	2109	2181	2254	2328	2403	2478	2555	2633	2712	8
9	1761	183	1899	1969	2039	2110	2182	2255	2329	2404	2480	2557	2634	2714	9
10	1762	1831	1900	1970	2040	2111	2184	2257	2330	2405	2481	2558	2636	2715	10
11	1764	1832	1901	1971	2041	2113	2185	2258	2332	2406	2482	2559	2637	2716	11
12	1765	1833	1902	1972	2043	2114	2186	2259	2333	2408	2484	2560	2638	2718	12
13	1766	1834	1903	1973	2044	2115	2187	2260	2334	2409	2485	2562	2640	2719	13
14	1767	1835	1905	1974	2045	2116	2188	2261	2335	2410	2486	2563	2641	2720	14
15	1768	1837	1906	1976	2046	2117	2190	2263	2337	2411	2487	2564	2642	2722	15
16	1769	1838	1907	1977	2047	2119	2191	2264	2338	2413	2489	2566	2644	2723	16
17	1770	1839	1908	1978	2048	2120	2192	2265	2339	2414	2490	2567	2645	2724	17
18	1772	1840	1909	1979	2050	2121	2193	2266	2340	2415	2491	2568	2646	2726	18
19	1773	1841	1910	1980	2051	2122	2194	2268	2342	2416	2492	2569	2648	2727	19
20	1774	1842	1912	1981	2052	2123	2196	2269	2343	2418	2494	2571	2649	2728	20
21	1775	1843	1913	1983	2053	2125	2197	2270	2344	2419	2495	2572	2650	2729	21
22	1776	1845	1914	1984	2054	2126	2198	2271	2345	2420	2496	2573	2651	2731	22
23	1777	1846	1915	1985	2056	2127	2199	2272	2346	2422	2498	2575	2653	2732	23
24	1778	1847	1916	1986	2057	2128	2200	2274	2348	2423	2499	2576	2654	2733	24
25	1780	1848	1917	1987	2058	2129	2202	2275	2349	2424	2500	2577	2655	2735	25
26	1781	1849	1918	1988	2059	2131	2203	2276	2350	2425	2501	2578	2657	2736	26
27	1782	1850	1920	1990	2060	2132	2204	2277	2351	2427	2503	2580	2658	2737	27
28	1783	1852	1921	1991	2061	2133	2205	2279	2353	2428	2504	2581	2659	2739	28
29	1784	1853	1922	1992	2063	2134	2207	2280	2354	2429	2505	2582	2661	2740	29
30	1785	1854	1923	1993	2064	2135	2208	2281	2355	2430	2506	2584	2662	2742	30
31	1786	1855	1924	1994	2065	2137	2209	2282	2356	2432	2508	2585	2663	2743	31
32	1787	1856	1925	1995	2066	2138	2210	2283	2358	2433	2509	2586	2665	2744	32
33	1789	1857	1927	1997	2067	2139	2211	2285	2359	2434	2510	2588	2666	2746	33
34	1790	1858	1928	1998	2068	2140	2213	2286	2360	2435	2512	2589	2667	2747	34
35	1791	1860	1929	1999	2070	2141	2214	2287	2361	2437	2513	2590	2669	2748	35
36	1792	1861	1930	2000	2071	2143	2215	2288	2363	2438	2514	2591	2670	2750	36
37	1793	1862	1931	2001	2072	2144	2216	2290	2364	2439	2515	2593	2671	2751	37
38	1794	1863	1932	2002	2073	2145	2217	2291	2365	2440	2517	2594	2673	2752	38
39	1795	1864	1934	2004	2075	2146	2219	2292	2366	2442	2518	2595	2674	2754	39
40	1797	1865	1935	2005	2076	2147	2220	2293	2368	2443	2519	2597	2675	2755	40
41	1798	1866	1936	2006	2077	2149	2221	2295	2369	2444	2521	2598	2676	2756	41
42	1799	1868	1937	2007	2078	2150	2222	2296	2370	2445	2522	2599	2678	2758	42
43	1800	1869	1938	2008	2079	2151	2224	2297	2371	2447	2523	2601	2679	2759	43
44	1801	1870	1939	2010	2080	2152	2225	2298	2373	2448	2524	2602	2680	2760	44
45	1802	1871	1941	2011	2082	2153	2226	2299	2374	2449	2526	2603	2682	2762	45
46	1803	1872	1942	2012	2083	2155	2227	2301	2375	2451	2527	2604	2683	2763	46
47	1805	1873	1943	2013	2084	2156	2228	2302	2376	2452	2528	2606	2684	2764	47
48	1805	1875	1944	2014	2085	2157	2230	2303	2378	2453	2530	2607	2686	2766	48
49	1807	1876	1945	2015	2086	2158	2231	2304	2379	2454	2531	2608	2687	2767	49
50	1808	1877	1946	2017	2088	2159	2232	2306	2380	2456	2532	2610	2688	2768	50
51	1809	1878	1948	2018	2089	2161	2233	2307	2381	2457	2533	2611	2690	2770	51
52	1810	1879	1949	2019	2090	2162	2235	2308	2383	2458	2535	2612	2691	2771	52
53	1811	1880	1950	2020	2091	2163	2236	2309	2384	2459	2536	2614	2692	2772	53
54	1813	1881	1951	2021	2092	2164	2237	2311	2385	2461	2537	2615	2694	2774	54
55	1814	1883	1952	2022	2094	2165	2238	2312	2386	2462	2538	2616	2695	2775	55
56	1815	1884	1953	2024	2095	2167	2239	2313	2388	2463	2540	2617	2696	2776	56
57	1816	1885	1955	2025	2096	2168	2241	2314	2389	2464	2541	2619	2698	2778	57
58	1817	1886	1956	2026	2097	2169	2242	2316	2390	2466	2542	2620	2699	2779	58
59	1818	1887	1957	2027	2098	2170	2243	2317	2391	2467	2544	2621	2700	2780	59
M.	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	41°	M.

TABLE XIV.
MERIDIONAL PARTS.

M.	42°	43°	44°	45°	46°	47°	48°	49°	50°	51°	52°	53°	54°	55°	M.
0	2782	2863	2946	3030	3116	3203	3292	3382	3474	3569	3665	3764	3865	3968	0
1	2783	2864	2947	3031	3117	3204	3293	3384	3476	3570	3667	3765	3866	3970	1
2	2784	2866	2949	3033	3118	3206	3295	3385	3478	3572	3668	3767	3868	3971	2
3	2786	2867	2950	3034	3120	3207	3296	3387	3479	3574	3670	3769	3870	3973	3
4	2787	2869	2951	3036	3121	3209	3298	3388	3481	3575	3672	3770	3871	3975	4
5	2788	2870	2953	3037	3123	3210	3299	3390	3482	3577	3673	3772	3873	3977	5
6	2790	2871	2954	3038	3124	3212	3301	3391	3484	3578	3675	3774	3875	3978	6
7	2791	2873	2956	3040	3126	3213	3302	3393	3485	3580	3677	3775	3877	3980	7
8	2792	2874	2957	3041	3127	3214	3303	3394	3487	3582	3678	3777	3878	3982	8
9	2794	2875	2958	3043	3129	3216	3305	3396	3488	3583	3680	3779	3880	3984	9
10	2795	2877	2960	3044	3130	3217	3306	3397	3490	3585	3681	3780	3882	3985	10
11	2797	2878	2961	3046	3131	3219	3308	3399	3492	3586	3683	3782	3883	3987	11
12	2798	2880	2963	3047	3133	3220	3309	3400	3493	3588	3685	3784	3885	3989	12
13	2799	2881	2964	3048	3134	3222	3311	3402	3495	3590	3686	3785	3887	3991	13
14	2801	2882	2965	3050	3136	3223	3312	3403	3496	3591	3688	3787	3889	3992	14
15	2802	2884	2967	3051	3137	3225	3314	3405	3498	3593	3690	3789	3890	3994	15
16	2803	2885	2968	3053	3139	3226	3316	3407	3499	3594	3691	3790	3892	3996	16
17	2805	2886	2970	3054	3140	3228	3317	3408	3501	3596	3693	3792	3894	3998	17
18	2806	2888	2971	3055	3142	3229	3319	3410	3503	3598	3695	3794	3895	3999	18
19	2807	2889	2972	3057	3143	3231	3320	3411	3504	3599	3696	3795	3897	4001	19
20	2809	2891	2974	3058	3144	3232	3322	3413	3506	3601	3698	3797	3899	4003	20
21	2810	2892	2975	3060	3146	3234	3323	3414	3507	3602	3699	3799	3901	4005	21
22	2811	2893	2976	3061	3147	3235	3325	3416	3509	3604	3701	3800	3902	4006	22
23	2813	2895	2978	3063	3149	3237	3326	3417	3510	3606	3703	3802	3904	4008	23
24	2814	2896	2979	3064	3150	3238	3328	3419	3512	3607	3704	3804	3906	4010	24
25	2815	2897	2981	3065	3152	3240	3329	3420	3514	3609	3706	3806	3907	4012	25
26	2817	2899	2982	3067	3153	3241	3331	3422	3515	3610	3708	3807	3909	4014	26
27	2818	2900	2983	3068	3155	3242	3332	3423	3517	3612	3709	3809	3911	4015	27
28	2820	2902	2985	3070	3156	3244	3334	3425	3518	3614	3711	3811	3913	4017	28
29	2821	2903	2986	3071	3157	3245	3335	3427	3520	3615	3713	3812	3914	4019	29
30	2822	2904	2988	3073	3159	3247	3337	3428	3521	3617	3714	3814	3916	4021	30
31	2824	2906	2989	3074	3160	3248	3338	3430	3523	3618	3716	3816	3918	4022	31
32	2825	2907	2991	3075	3162	3250	3340	3431	3525	3620	3717	3817	3919	4024	32
33	2826	2908	2992	3077	3163	3251	3341	3433	3526	3622	3719	3819	3921	4026	33
34	2828	2910	2993	3078	3165	3253	3343	3434	3528	3623	3721	3821	3923	4028	34
35	2829	2911	2995	3080	3166	3254	3344	3436	3529	3625	3722	3822	3925	4029	35
36	2830	2913	2996	3081	3168	3256	3346	3437	3531	3626	3724	3824	3926	4031	36
37	2832	2914	2998	3083	3169	3257	3347	3439	3532	3628	3726	3826	3928	4033	37
38	2833	2915	2999	3084	3171	3259	3349	3440	3534	3630	3727	3827	3930	4035	38
39	2834	2917	3000	3085	3172	3260	3350	3442	3536	3631	3729	3829	3932	4037	39
40	2836	2918	3002	3087	3173	3262	3352	3443	3537	3633	3731	3831	3933	4038	40
41	2837	2919	3003	3088	3175	3263	3353	3445	3539	3634	3732	3832	3935	4040	41
42	2839	2921	3005	3090	3176	3265	3355	3447	3540	3636	3734	3834	3937	4042	42
43	2840	2922	3006	3091	3178	3266	3356	3448	3542	3638	3736	3836	3938	4044	43
44	2841	2924	3007	3093	3179	3268	3358	3450	3543	3639	3737	3838	3940	4045	44
45	2843	2925	3009	3094	3181	3269	3359	3451	3545	3641	3739	3839	3942	4047	45
46	2844	2926	3010	3095	3182	3271	3361	3453	3547	3643	3741	3841	3944	4049	46
47	2845	2928	3012	3097	3184	3272	3362	3454	3548	3644	3742	3843	3945	4051	47
48	2847	2929	3013	3098	3185	3274	3364	3456	3550	3646	3744	3844	3947	4052	48
49	2848	2931	3014	3100	3187	3275	3365	3457	3551	3647	3746	3846	3949	4054	49
50	2849	2932	3016	3101	3188	3277	3367	3459	3553	3649	3747	3848	3951	4056	50
51	2851	2933	3017	3103	3190	3278	3368	3460	3555	3651	3749	3849	3952	4058	51
52	2852	2935	3019	3104	3191	3280	3370	3462	3556	3652	3750	3851	3954	4060	52
53	2854	2936	3020	3105	3192	3281	3371	3464	3558	3654	3752	3853	3956	4061	53
54	2855	2937	3021	3107	3194	3283	3373	3465	3559	3655	3754	3854	3958	4063	54
55	2856	2939	3023	3108	3195	3284	3374	3467	3561	3657	3755	3856	3959	4065	55
56	2858	2940	3024	3110	3197	3286	3376	3468	3562	3659	3757	3858	3961	4067	56
57	2859	2942	3026	3111	3198	3287	3378	3470	3564	3660	3759	3860	3963	4069	57
58	2860	2943	3027	3113	3200	3289	3379	3471	3566	3662	3760	3861	3964	4070	58
59	2862	2944	3029	3114	3201	3290	3381	3473	3567	3664	3762	3863	3966	4072	59
M.	42°	43°	44°	45°	46°	47°	48°	49°	50°	51°	52°	53°	54°	55°	M.

TABLE XIV.

MERIDIONAL PARTS.

M	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	M.
0	4074	4183	4294	4409	4527	4649	4775	4905	5039	5179	5324	5474	5631	5795	0
1	4076	4184	4296	4411	4529	4651	4777	4907	5042	5181	5326	5477	5633	5797	1
2	4077	4186	4299	4413	4531	4653	4779	4909	5044	5184	5328	5479	5636	5800	2
3	4079	4188	4300	4415	4533	4655	4781	4912	5046	5186	5331	5482	5639	5803	3
4	4081	4193	4302	4417	4535	4657	4784	4914	5049	5188	5333	5484	5642	5806	4
5	4083	4192	4304	4419	4537	4660	4786	4916	5051	5191	5336	5487	5644	5809	5
6	4085	4194	4306	4421	4539	4662	4788	4918	5053	5193	5338	5489	5647	5811	6
7	4086	4195	4308	4423	4541	4664	4790	4920	5055	5195	5341	5492	5650	5814	7
8	4088	4197	4309	4425	4543	4666	4792	4923	5058	5198	5343	5495	5652	5817	8
9	4090	4199	4311	4427	4545	4668	4794	4925	5060	5200	5346	5497	5655	5820	9
10	4092	4201	4313	4429	4547	4670	4796	4927	5062	5203	5348	5500	5658	5823	10
11	4094	4203	4315	4431	4549	4672	4798	4929	5065	5205	5351	5502	5660	5825	11
12	4095	4205	4317	4433	4551	4674	4801	4931	5067	5207	5353	5505	5663	5828	12
13	4097	4207	4319	4434	4553	4676	4803	4934	5069	5210	5356	5507	5666	5831	13
14	4099	4208	4321	4436	4555	4678	4805	4936	5071	5212	5358	5510	5668	5834	14
15	4101	4210	4323	4438	4557	4680	4807	4938	5074	5214	5361	5513	5671	5837	15
16	4103	4212	4325	4440	4559	4682	4809	4940	5076	5217	5363	5515	5674	5839	16
17	4104	4214	4327	4442	4562	4684	4811	4943	5078	5219	5366	5518	5676	5842	17
18	4106	4216	4328	4444	4564	4687	4814	4945	5081	5222	5368	5520	5679	5845	18
19	4108	4218	4330	4446	4566	4689	4816	4947	5083	5224	5371	5523	5682	5848	19
20	4110	4220	4332	4448	4568	4691	4818	4949	5085	5226	5373	5526	5685	5851	20
21	4112	4221	4334	4450	4570	4693	4820	4951	5088	5229	5376	5528	5687	5854	21
22	4113	4223	4336	4452	4572	4695	4822	4954	5090	5231	5378	5531	5690	5856	22
23	4115	4225	4338	4454	4574	4697	4824	4956	5092	5234	5380	5533	5693	5859	23
24	4117	4227	4340	4456	4576	4699	4826	4958	5095	5236	5383	5536	5695	5862	24
25	4119	4229	4342	4458	4578	4701	4829	4960	5097	5238	5385	5539	5698	5865	25
26	4121	4231	4344	4460	4580	4703	4831	4963	5099	5241	5388	5541	5701	5868	26
27	4122	4232	4346	4462	4582	4705	4833	4965	5102	5243	5390	5544	5704	5871	27
28	4124	4234	4347	4464	4584	4707	4835	4967	5104	5246	5393	5546	5706	5874	28
29	4126	4236	4349	4466	4586	4710	4837	4969	5106	5248	5395	5549	5709	5876	29
30	4128	4238	4351	4468	4588	4712	4839	4972	5108	5250	5398	5552	5712	5879	30
31	4130	4240	4353	4470	4590	4714	4842	4974	5111	5253	5401	5554	5715	5882	31
32	4132	4242	4355	4472	4592	4716	4844	4976	5113	5255	5403	5557	5717	5885	32
33	4133	4244	4357	4474	4594	4718	4846	4978	5115	5258	5406	5559	5720	5888	33
34	4135	4246	4359	4476	4596	4720	4848	4981	5118	5260	5408	5562	5723	5891	34
35	4137	4247	4361	4478	4598	4722	4850	4983	5120	5263	5411	5565	5725	5894	35
36	4139	4249	4363	4480	4600	4724	4852	4985	5122	5265	5413	5567	5728	5896	36
37	4141	4251	4365	4482	4602	4726	4855	4987	5125	5267	5416	5570	5731	5899	37
38	4142	4253	4367	4484	4604	4728	4857	4990	5127	5270	5418	5573	5734	5902	38
39	4144	4255	4369	4486	4606	4731	4859	4992	5129	5272	5421	5575	5736	5905	39
40	4146	4257	4370	4488	4608	4733	4861	4994	5132	5275	5423	5578	5739	5908	40
41	4148	4259	4372	4490	4610	4735	4863	4996	5134	5277	5426	5580	5742	5911	41
42	4150	4260	4374	4492	4612	4737	4865	4999	5136	5280	5428	5583	5745	5914	42
43	4152	4262	4376	4494	4614	4739	4868	5001	5139	5282	5431	5586	5747	5917	43
44	4153	4264	4378	4495	4616	4741	4870	5003	5141	5284	5433	5588	5750	5919	44
45	4155	4266	4380	4497	4618	4743	4872	5005	5143	5287	5436	5591	5753	5922	45
46	4157	4268	4382	4499	4620	4745	4874	5008	5146	5289	5438	5594	5756	5925	46
47	4159	4270	4384	4501	4623	4747	4876	5010	5148	5292	5441	5596	5758	5928	47
48	4161	4272	4386	4503	4625	4750	4879	5012	5151	5294	5443	5599	5761	5931	48
49	4162	4274	4388	4505	4627	4752	4881	5014	5153	5297	5446	5602	5764	5934	49
50	4164	4275	4390	4507	4629	4754	4883	5017	5155	5299	5448	5604	5767	5937	50
51	4166	4277	4392	4509	4631	4756	4885	5019	5158	5301	5451	5607	5770	5940	51
52	4168	4279	4394	4511	4633	4758	4887	5021	5160	5304	5454	5610	5772	5943	52
53	4170	4281	4396	4513	4635	4760	4890	5023	5162	5306	5456	5612	5775	5946	53
54	4172	4283	4398	4515	4637	4762	4892	5026	5165	5309	5459	5615	5778	5948	54
55	4173	4285	4399	4517	4639	4764	4894	5028	5167	5311	5461	5617	5781	5951	55
56	4175	4287	4401	4519	4641	4766	4896	5030	5169	5314	5464	5620	5783	5954	56
57	4177	4289	4403	4521	4643	4769	4898	5033	5172	5316	5466	5623	5786	5957	57
58	4179	4291	4405	4523	4645	4771	4901	5035	5174	5319	5469	5625	5789	5960	58
59	4181	4292	4407	4525	4647	4773	4903	5037	5176	5321	5471	5628	5792	5963	59
M.	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	M.

TABLE XIV.
MERIDIONAL PARTS.

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M.	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°	83°	M.
0	5966	6146	6335	6534	6746	6970	7210	7467	7745	8046	8375	8739	9145	9606	0
1	5969	6149	6338	6538	6749	6974	7214	7472	7749	8051	8381	8745	9153	9614	1
2	5972	6152	6341	6541	6753	6978	7218	7476	7754	8056	8387	8752	9160	9622	2
3	5975	6155	6345	6545	6757	6982	7222	7481	7759	8061	8393	8758	9167	9631	3
4	5978	6158	6348	6548	6760	6986	7227	7485	7764	8067	8398	8765	9174	9639	4
5	5981	6161	6351	6552	6764	6990	7231	7490	7769	8072	8404	8771	9182	9647	5
6	5984	6164	6354	6555	6768	6994	7235	7494	7774	8077	8410	8778	9189	9655	6
7	5986	6167	6358	6558	6771	6997	7239	7498	7778	8083	8416	8784	9196	9664	7
8	5989	6170	6361	6562	6775	7001	7243	7503	7783	8088	8422	8791	9203	9672	8
9	5992	6173	6364	6563	6779	7005	7247	7507	7788	8093	8427	8797	9211	9680	9
10	5995	6177	6367	6569	6782	7009	7252	7512	7793	8099	8433	8804	9218	9689	10
11	5998	6180	6371	6572	6786	7013	7256	7516	7798	8104	8439	8810	9225	9697	11
12	6001	6183	6374	6576	6790	7017	7260	7521	7808	8109	8445	8817	9233	9706	12
13	6004	6186	6377	6579	6793	7021	7264	7525	7808	8115	8451	8823	9240	9714	13
14	6007	6189	6380	6583	6797	7025	7268	7530	7813	8120	8457	8830	9248	9723	14
15	6010	6192	6384	6586	6801	7029	7273	7535	7817	8125	8463	8836	9255	9731	15
16	6013	6195	6387	6590	6804	7033	7277	7539	7822	8131	8469	8843	9262	9740	16
17	6016	6198	6390	6593	6808	7037	7281	7544	7827	8136	8474	8849	9270	9748	17
18	6019	6201	6394	6597	6812	7041	7285	7548	7832	8141	8480	8856	9277	9757	18
19	6022	6205	6397	6600	6815	7045	7289	7553	7837	8147	8485	8863	9285	9765	19
20	6025	6208	6400	6603	6819	7048	7294	7557	7842	8152	8492	8869	9292	9774	20
21	6028	6211	6403	6607	6823	7052	7298	7562	7847	8158	8498	8876	9300	9783	21
22	6031	6214	6407	6610	6826	7056	7302	7566	7852	8163	8504	8883	9307	9791	22
23	6034	6217	6410	6614	6830	7060	7306	7571	7857	8168	8510	8889	9315	9800	23
24	6037	6220	6413	6617	6834	7064	7311	7576	7862	8174	8516	8896	9322	9809	24
25	6040	6223	6417	6621	6838	7068	7315	7580	7867	8179	8522	8903	9330	9817	25
26	6043	6226	6420	6624	6841	7072	7319	7585	7872	8185	8528	8909	9337	9826	26
27	6046	6230	6423	6628	6845	7076	7323	7589	7877	8190	8534	8916	9345	9835	27
28	6049	6233	6427	6631	6849	7080	7328	7594	7882	8196	8540	8923	9353	9844	28
29	6052	6236	6430	6635	6853	7084	7332	7599	7887	8201	8546	8930	9360	9852	29
30	6055	6239	6433	6639	6856	7088	7336	7603	7892	8207	8552	8936	9368	9861	30
31	6058	6242	6437	6642	6860	7092	7341	7608	7897	8212	8558	8943	9376	9870	31
32	6061	6245	6440	6646	6864	7096	7345	7612	7902	8218	8565	8950	9383	9879	32
33	6064	6249	6443	6649	6868	7100	7349	7617	7907	8223	8571	8957	9391	9883	33
34	6067	6252	6447	6653	6871	7104	7353	7622	7912	8229	8577	8963	9399	9897	34
35	6070	6255	6450	6656	6875	7108	7358	7626	7917	8234	8583	8970	9407	9906	35
36	6073	6258	6453	6660	6879	7112	7362	7631	7922	8240	8589	8977	9414	9915	36
37	6076	6261	6457	6663	6883	7116	7366	7636	7927	8245	8595	8984	9422	9924	37
38	6079	6264	6460	6667	6886	7120	7371	7640	7932	8251	8601	8991	9430	9933	38
39	6082	6268	6463	6670	6890	7124	7375	7645	7937	8256	8607	8998	9438	9942	39
40	6085	6271	6467	6674	6894	7128	7379	7650	7942	8262	8614	9005	9445	9951	40
41	6088	6274	6470	6677	6898	7132	7384	7654	7948	8267	8620	9012	9453	9960	41
42	6091	6277	6473	6681	6901	7136	7388	7659	7953	8273	8626	9018	9461	9969	42
43	6094	6280	6477	6685	6905	7140	7392	7664	7958	8279	8632	9025	9469	9978	43
44	6097	6283	6480	6688	6909	7145	7397	7668	7963	8284	8638	9032	9477	9987	44
45	6100	6287	6483	6692	6913	7149	7401	7673	7968	8290	8644	9039	9485	9996	45
46	6103	6290	6487	6695	6917	7153	7406	7678	7973	8295	8651	9046	9493	10005	46
47	6106	6293	6490	6699	6920	7157	7410	7683	7978	8301	8657	9053	9501	10015	47
48	6109	6296	6494	6702	6924	7161	7414	7687	7983	8307	8663	9060	9509	10024	48
49	6112	6299	6497	6706	6928	7165	7419	7692	7989	8312	8669	9067	9517	10033	49
50	6115	6303	6500	6710	6932	7169	7423	7697	7994	8318	8676	9074	9525	10043	50
51	6118	6306	6504	6713	6936	7173	7427	7702	7999	8324	8682	9081	9533	10052	51
52	6121	6309	6507	6717	6940	7177	7432	7706	8004	8329	8688	9088	9541	10061	52
53	6124	6312	6511	6720	6943	7181	7436	7711	8009	8335	8695	9096	9549	10071	53
54	6127	6315	6514	6724	6947	7185	7441	7716	8014	8341	8701	9105	9557	10080	54
55	6130	6319	6517	6728	6951	7189	7445	7721	8020	8347	8707	9110	9565	10089	55
56	6133	6322	6521	6731	6955	7194	7449	7725	8025	8352	8714	9117	9573	10099	56
57	6136	6325	6524	6735	6959	7198	7454	7730	8030	8358	8720	9124	9581	10108	57
58	6140	6328	6528	6738	6963	7202	7458	7735	8035	8364	8726	9131	9589	10118	58
59	6143	6332	6531	6742	6966	7206	7463	7740	8040	8369	8733	9138	9598	10127	59
M.	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°	83°	M.

MERIDIONAL PARTS.

M.	84°	85°	86°	87°	88°	89°
0	10137	10765	11533	12522	13917	16300
1	10147	10776	11547	12541	13945	16357
2	10156	10788	11561	12561	13974	16416
3	10166	10799	11576	12580	14004	16476
4	10175	10811	11590	12599	14033	16537
5	10185	10823	11605	12619	14063	16599
6	10195	10834	11620	12639	14093	16662
7	10205	10846	11634	12659	14123	16726
8	10214	10858	11649	12679	14154	16792
9	10224	10870	11664	12699	14185	16858
10	10234	10881	11679	12719	14216	16926
11	10244	10893	11694	12739	14247	16996
12	10254	10905	11709	12759	14279	17067
13	10264	10917	11724	12780	14311	17140
14	10274	10929	11739	12801	14343	17213
15	10284	10941	11755	12821	14376	17289
16	10294	10953	11770	12842	14409	17366
17	10304	10965	11785	12863	14442	17444
18	10314	10978	11801	12885	14475	17526
19	10324	10990	11816	12906	14509	17609
20	10334	11002	11832	12927	14543	17694
21	10344	11014	11848	12949	14578	17781
22	10354	11027	11863	12971	14613	17870
23	10364	11039	11879	12992	14648	17962
24	10374	11052	11895	13014	14684	18056
25	10385	11064	11911	13037	14720	18153
26	10395	11077	11927	13059	14756	18252
27	10405	11089	11943	13081	14793	18355
28	10416	11102	11959	13104	14830	18461
29	10426	11115	11976	13126	14868	18570
30	10437	11127	11992	13149	14906	18683
31	10447	11140	12008	13172	14944	18799
32	10457	11153	12025	13195	14983	18920
33	10468	11166	12041	13219	15022	19045
34	10478	11179	12058	13242	15062	19174
35	10489	11192	12075	13266	15102	19309
36	10500	11205	12092	13290	15143	19449
37	10510	11218	12109	13314	15184	19596
38	10521	11231	12126	13338	15226	19749
39	10532	11244	12143	13362	15268	19908
40	10543	11257	12160	13387	15310	20076
41	10553	11270	12177	13411	15354	20252
42	10564	11284	12194	13436	15398	20439
43	10575	11297	12212	13461	15442	20635
44	10586	11310	12229	13486	15487	20843
45	10597	11324	12247	13512	15533	21065
46	10608	11338	12265	13537	15579	21302
47	10619	11351	12282	13563	15625	21557
48	10630	11365	12300	13589	15673	21832
49	10641	11378	12318	13615	15721	22132
50	10652	11392	12336	13641	15770	22459
51	10663	11406	12354	13668	15819	22821
52	10674	11420	12373	13694	15869	23226
53	10685	11434	12391	13721	15920	23685
54	10696	11448	12409	13749	15972	24215
55	10708	11462	12428	13776	16025	24842
56	10719	11476	12446	13804	16078	25609
57	10730	11490	12465	13832	16132	26598
58	10742	11504	12484	13860	16187	27992
59	10753	11518	12503	13888	16243	30375
M.	84°	85°	86°	87°	88°	89°

DOMINICAL LETTER.

				Hundreds of Years.			
				100	200	300	400
				500	600	700	800
				900	1000	1100	1200
				1300	1400	1500	1600
				1700	1800	1900	2000
				2100	2200	2300	2400
				2500	2600	2700	2800
				2900	3000	3100	3200
				3300	3400	3500	3600
				3700	3800	3900	4000
				4100	4200	4300	4400
Years above Hundreds.				C	E	G	B.A
1	29	57	85	B	D	F	G
2	30	58	86	A	C	E	F
3	31	59	87	G	B	D	E
4	32	60	88	F.E	A.G	C.B	D.C
5	33	61	89	D	F	A	B
6	34	62	90	C	E	G	A
7	35	63	91	B	D	F	G
8	36	64	92	A.G	C.B	E.D	F.E
9	37	65	93	F	A	C	D
10	38	66	94	E	G	B	C
11	39	67	95	D	F	A	B
12	40	68	96	C.B	E.D	G.F	A.G
13	41	69	97	A	C	E	F
14	42	70	98	G	B	D	E
15	43	71	99	F	A	C	D
16	44	72		E.D	G.F	B.A	C.B
17	45	73		C	E	G	A
18	46	74		B	D	F	G
19	47	75		A	C	E	F
20	48	76		G.F	B.A	D.C	E.D
21	49	77		E	G	B	C
22	50	78		D	F	A	B
23	51	79		C	E	G	A
24	52	80		B.A	D.C	F.E	G.F
25	53	81		G	B	D	E
26	54	82		F	A	C	D
27	55	83		E	G	B	C
28	56	84		D.C	F.E	A.G	B.A

To find the Day of the Week answering to a given Day of the Month, and conversely.

MONTHS.	DOMINICAL LETTERS.						
January, October...	A	B	C	D	E	F	G
Feb. March, Nov...	D	E	F	G	A	B	C
April, July	G	A	B	C	D	E	F
May	B	C	D	E	F	G	A
June	E	F	G	A	B	C	D
August	C	D	E	F	G	A	B
September, December	F	G	A	B	C	D	E
	1	2	3	4	5	6	
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

New Style.

Julian Period 365 d 6 hr

Gregorian " 365 5 49 min

Difference $\frac{1}{2}$ hr " " " "

" $\frac{1}{2}$ 131 yrs 1 day nearly

A.D. 200 Periods equal

331 { add 1 day
462 to old for new style

462 { " 2 "

593 { " 3 "

724 { " 4 "

855 { " 5 "

986 { " 6 "

1117 { " 7 "

1248 { " 8 "

1379 { " 9 "

1510 { " 10 "

1641 { " 11 "

1771 { " 12 "

New Style ordained to be adopted by Pope Gregory XIII in 1582 when 10 days were added
Adopted 30th 1752 in England, changed to 14 " "

For minute adjustments see astronomical treatises
See "New Style" in hand Dic & Dates

K.
the
ide.
r.

4	45	10	20	3	43	4	28	19	80	2	40	31	90	1	38	64	0	28	81	1	70	0	8
4	50	10	11	3	50	5	20	19	40	2	88	31	40	1	32	65	0	26	84	1	80	0	1
4	55	10	2	3	54	5	18	19	50	2	37	32	0	1	31	66	0	25	90	0	90	0	0

TABLE XIV.
MERIDIONAL PARTS.

M	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	M.
0	4074	4189	4294	4409	4527	4649	4775	4905	5039	5179	5324	5474	5631	5795	0
1	4076	4184	4296	4411	4529	4651	4777	4907	5042	5181	5326	5477	5633	5797	1
2	4077	4186	4299	4413	4531	4653	4779	4909	5044	5184	5328	5479	5636	5800	2
3	4079	4188	4300	4415	4533	4655	4781	4912	5046	5186	5331	5482	5639	5803	3
4	4081	4190	4302	4417	4535	4657	4784	4914	5049	5188	5333	5484	5642	5806	4
5	4083	4192	4304	4419	4537	4660	4786	4916	5051	5191	5336	5487	5644	5809	5
6	4085	4194	4306	4421	4539	4662	4788	4918	5053	5193	5338	5489	5647	5811	6
7	4086	4195	4308	4423	4541	4664	4790	4920	5055	5195	5341	5492	5650	5814	7
8	4088	4197	4309	4425	4543	4666	4792	4923	5058	5198	5343	5495	5652	5817	8
9	4090	4199	4311	4427	4545	4668	4794	4925	5060	5200	5346	5497	5655	5820	9
10	4092	4201	4313	4429	4547	4670	4796	4927	5062	5203	5348	5500	5658	5823	10
11	4094	4203	4315	4431	4549	4672	4798	4929	5065	5205	5351	5502	5660	5825	11
12	4095	4205	4317	4433	4551	4674	4801	4931	5067	5207	5353	5505	5663	5828	12
13	4097	4207	4319	4434	4553	4676	4803	4934	5069	5210	5356	5507	5666	5831	13
14	4099	4208	4321	4436	4555	4678	4805	4936	5071	5212	5358	5510	5668	5834	14
15	4101	4210	4323	4438	4557	4680	4807	4938	5074	5214	5361	5513	5671	5837	15
16	4103	4212	4325	4440	4559	4682	4809	4940	5076	5217	5363	5515	5674	5839	16
17	4104	4214	4327	4442	4562	4684	4811	4943	5078	5219	5366	5518	5676	5842	17
18	4106	4216	4328	4444	4564	4687	4814	4945	5081	5222	5368	5520	5679	5845	18
19	4108	4218	4330	4446	4566	4689	4816	4947	5083	5224	5371	5523	5682	5848	19
20	4110	4220	4332	4448	4568	4691	4818	4949	5085	5226	5373	5526	5685	5851	20
21	4112	4221	4334	4450	4570	4693	4820	4951	5088	5229	5376	5528	5687	5854	21
22	4113	4223	4336	4452	4572	4695	4822	4954	5090	5231	5378	5531	5690	5856	22
23	4115	4225	4338	4454	4574	4697	4824	4956	5092	5234	5380	5533	5693	5859	23
24	4117	4227	4340	4456	4576	4699	4826	4958	5095	5236	5383	5536	5695	5862	24
25	4119	4229	4342	4458	4578	4701	4829	4960	5097	5238	5385	5539	5698	5865	25
26	4121	4231	4344	4460	4580	4703	4831	4963	5099	5241	5388	5541	5701	5868	26
27	4122	4232	4346	4462	4582	4705	4833	4965	5102	5243	5390	5544	5704	5871	27
28	4124	4234	4347	4464	4584	4707	4835	4967	5104	5246	5393	5546	5706	5874	28
29	4126	4236	4349	4466	4586	4710	4837	4969	5106	5248	5395	5549	5709	5876	29
30	4128	4238	4351	4468	4588	4712	4839	4972	5108	5250	5398	5552	5712	5879	30
31	4130	4240	4353	4470	4590	4714	4842	4974	5111	5253	5401	5554	5715	5882	31
32	4132	4242	4355	4472	4592	4716	4844	4976	5113	5255	5403	5557	5717	5885	32
33	4133	4244	4357	4474	4594	4718	4846	4978	5115	5258	5406	5559	5720	5888	33
34	4135	4246	4359	4476	4596	4720	4848	4981	5118	5260	5408	5562	5723	5891	34
35	4137	4247	4361	4478	4598	4722	4850	4983	5120	5263	5411	5565	5725	5894	35
36	4139	4249	4363	4480	4600	4724	4852	4985	5122	5265	5413	5567	5728	5896	36
37	4141	4251	4365	4482	4602	4726	4855	4987	5125	5267	5416	5570	5731	5899	37
38	4142	4253	4367	4484	4604	4728	4857	4990	5127	5270	5418	5573	5734	5902	38
39	4144	4255	4369	4486	4606	4731	4859	4992	5129	5272	5421	5575	5736	5905	39
40	4146	4257	4370	4488	4608	4733	4861	4994	5132	5275	5423	5578	5739	5908	40
41	4148	4259	4372	4490	4610	4735	4863	4996	5134	5277	5426	5580	5742	5911	41
42	4150	4260	4374	4492	4612	4737	4865	4999	5136	5280	5428	5583	5745	5914	42
43	4152	4262	4376	4494	4614	4739	4868	5001	5139	5282	5431	5586	5747	5917	43
44	4153	4264	4378	4495	4616	4741	4870	5003	5141	5284	5433	5588	5750	5919	44
45	4155	4266	4380	4497	4618	4743	4872	5005	5143	5287	5436	5591	5753	5922	45
46	4157	4268	4382	4499	4620	4745	4874	5008	5146	5289	5438	5594	5756	5925	46
47	4159	4270	4384	4501	4623	4747	4876	5010	5148	5292	5441	5596	5758	5928	47
48	4161	4272	4386	4503	4625	4750	4879	5012	5151	5294	5443	5599	5761	5931	48
49	4162	4274	4388	4505	4627	4752	4881	5014	5153	5297	5446	5602	5764	5934	49
50	4164	4275	4390	4507	4629	4754	4883	5017	5155	5299	5448	5604	5767	5937	50
51	4166	4277	4392	4509	4631	4756	4885	5019	5158	5301	5451	5607	5770	5940	51
52	4168	4279	4394	4511	4633	4758	4887	5021	5160	5304	5454	5610	5772	5943	52
53	4170	4281	4396	4513	4635	4760	4890	5023	5162	5306	5456	5612	5775	5946	53
54	4172	4283	4398	4515	4637	4762	4892	5026	5165	5309	5459	5615	5778	5948	54
55	4173	4285	4399	4517	4639	4764	4894	5028	5167	5311	5461	5617	5781	5951	55
56	4175	4287	4401	4519	4641	4766	4896	5030	5169	5314	5464	5620	5783	5954	56
57	4177	4289	4403	4521	4643	4769	4898	5033	5172	5316	5466	5623	5786	5957	57
58	4179	4291	4405	4523	4645	4771	4901	5035	5174	5319	5469	5625	5789	5960	58
59	4181	4292	4407	4525	4647	4773	4903	5037	5176	5321	5471	5628	5792	5963	59
M.	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	M.

TABLE XIV.
MERIDIONAL PARTS.

M.	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°	83°	M.
0	5966	6146	6335	6534	6746	6970	7210	7467	7745	8046	8375	8739	9145	9606	0
1	5969	6149	6338	6538	6749	6974	7214	7472	7749	8051	8381	8745	9153	9614	1
2	5972	6152	6341	6541	6753	6978	7218	7476	7754	8056	8387	8752	9160	9622	2
3	5975	6155	6345	6545	6757	6982	7222	7481	7759	8061	8393	8758	9167	9631	3
4	5978	6158	6348	6548	6760	6986	7227	7485	7764	8067	8398	8765	9174	9639	4
5	5981	6161	6351	6552	6764	6990	7231	7490	7769	8072	8404	8771	9182	9647	5
6	5984	6164	6354	6555	6768	6994	7235	7494	7774	8077	8410	8778	9189	9655	6
7	5986	6167	6358	6558	6771	6997	7239	7498	7778	8083	8416	8784	9196	9664	7
8	5989	6170	6361	6562	6775	7001	7243	7503	7783	8088	8422	8791	9203	9672	8
9	5992	6173	6364	6565	6779	7005	7247	7507	7788	8093	8427	8797	9211	9680	9
10	5995	6177	6367	6569	6782	7009	7252	7512	7793	8099	8433	8804	9218	9689	10
11	5998	6180	6371	6572	6786	7013	7256	7516	7798	8104	8439	8810	9225	9697	11
12	6001	6183	6374	6576	6790	7017	7260	7521	7808	8109	8445	8817	9233	9706	12
13	6004	6186	6377	6579	6793	7021	7264	7525	7808	8115	8451	8823	9240	9714	13
14	6007	6189	6380	6583	6797	7025	7268	7530	7813	8120	8457	8830	9248	9723	14
15	6010	6192	6384	6586	6801	7029	7273	7535	7817	8125	8463	8836	9255	9731	15
16	6013	6195	6387	6590	6804	7033	7277	7539	7822	8131	8469	8843	9262	9740	16
17	6016	6198	6390	6593	6808	7037	7281	7544	7827	8136	8474	8849	9270	9748	17
18	6019	6201	6394	6597	6812	7041	7285	7548	7832	8141	8480	8856	9277	9757	18
19	6022	6205	6397	6600	6815	7045	7289	7553	7837	8147	8484	8863	9285	9766	19
20	6025	6208	6400	6603	6819	7048	7294	7557	7842	8152	8492	8869	9292	9774	20
21	6028	6211	6403	6607	6823	7052	7298	7562	7847	8158	8498	8876	9300	9783	21
22	6031	6214	6407	6610	6826	7056	7302	7566	7852	8163	8504	8883	9307	9791	22
23	6034	6217	6410	6614	6830	7060	7306	7571	7857	8168	8510	8889	9315	9800	23
24	6037	6220	6413	6617	6834	7064	7311	7576	7862	8174	8516	8896	9322	9809	24
25	6040	6223	6417	6621	6838	7068	7315	7580	7867	8179	8522	8903	9330	9817	25
26	6043	6226	6420	6624	6841	7072	7319	7585	7872	8185	8528	8909	9337	9826	26
27	6046	6230	6423	6628	6845	7076	7323	7589	7877	8190	8534	8916	9345	9835	27
28	6049	6233	6427	6631	6849	7080	7328	7594	7883	8196	8540	8923	9353	9844	28
29	6052	6236	6430	6635	6853	7084	7332	7599	7887	8201	8546	8930	9360	9852	29
30	6055	6239	6433	6639	6856	7088	7336	7603	7892	8207	8552	8936	9368	9861	30
31	6058	6242	6437	6642	6860	7092	7341	7608	7897	8212	8558	8943	9376	9870	31
32	6061	6245	6440	6646	6864	7096	7345	7612	7902	8218	8565	8950	9383	9879	32
33	6064	6249	6443	6649	6868	7100	7349	7617	7907	8223	8571	8957	9391	9888	33
34	6067	6252	6447	6653	6871	7104	7353	7622	7912	8229	8577	8963	9399	9897	34
35	6070	6255	6450	6656	6875	7108	7358	7626	7917	8234	8583	8970	9407	9906	35
36	6073	6258	6453	6660	6879	7112	7362	7631	7922	8240	8589	8977	9414	9915	36
37	6076	6261	6457	6663	6883	7116	7366	7636	7927	8245	8595	8984	9422	9924	37
38	6079	6264	6460	6667	6886	7120	7371	7640	7932	8251	8601	8991	9430	9933	38
39	6082	6268	6463	6670	6890	7124	7375	7645	7937	8256	8607	8998	9438	9942	39
40	6085	6271	6467	6674	6894	7128	7379	7650	7942	8262	8614	9005	9445	9951	40
41	6088	6274	6470	6677	6898	7132	7384	7654	7948	8267	8620	9012	9453	9960	41
42	6091	6277	6473	6681	6901	7136	7388	7659	7953	8273	8626	9018	9461	9969	42
43	6094	6280	6477	6685	6905	7140	7392	7664	7958	8279	8632	9025	9469	9978	43
44	6097	6283	6480	6688	6909	7145	7397	7668	7963	8284	8638	9032	9477	9987	44
45	6100	6287	6483	6692	6913	7149	7401	7673	7968	8290	8644	9039	9485	9996	45
46	6103	6290	6487	6695	6917	7153	7406	7678	7973	8295	8651	9046	9493	10005	46
47	6106	6293	6490	6699	6920	7157	7410	7683	7978	8301	8657	9053	9501	10015	47
48	6109	6296	6494	6702	6924	7161	7414	7687	7983	8307	8663	9060	9509	10024	48
49	6112	6299	6497	6706	6928	7165	7419	7692	7989	8312	8669	9067	9517	10033	49
50	6115	6303	6500	6710	6932	7169	7423	7697	7994	8318	8676	9074	9525	10043	50
51	6118	6306	6504	6713	6936	7173	7427	7702	7999	8324	8682	9081	9533	10052	51
52	6121	6309	6507	6717	6940	7177	7432	7706	8004	8329	8688	9088	9541	10061	52
53	6124	6312	6511	6720	6943	7181	7436	7711	8009	8335	8695	9096	9549	10071	53
54	6127	6315	6514	6724	6947	7185	7441	7716	8014	8341	8701	9103	9557	10080	54
55	6130	6319	6517	6728	6951	7189	7445	7721	8020	8347	8707	9110	9565	10089	55
56	6133	6322	6521	6731	6955	7194	7449	7725	8025	8352	8714	9117	9573	10099	56
57	6136	6325	6524	6735	6959	7198	7454	7730	8030	8358	8720	9124	9581	10108	57
58	6140	6328	6528	6738	6963	7202	7458	7735	8035	8364	8726	9131	9589	10118	58
59	6143	6332	6531	6742	6966	7206	7463	7740	8040	8369	8733	9138	9598	10127	59
M.	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°	83°	M.

TABLE XX.

Depression of
the Horizon.

Height of the Eye.	Dip.
1ft.	1'.0
2	1.4
3	1.7
4	1.9
5	2.1
6	2.3
7	2.5
8	2.7
9	2.9
10	3.0
11	3.2
12	3.3
13	3.4
14	3.6
15	3.7
16	3.8
17	4.0
18	4.1
19	4.2
20	4.3
21	4.4
22	4.5
23	4.6
24	4.7
25	4.8
26	4.9
28	5.0
30	5.2
35	5.6
40	6.0
45	6.4
50	6.7
55	7.1
60	7.4
65	7.7
70	8.0
75	8.2
80	8.5
90	9.0
100	9.5
110	10.0
120	10.5
130	10.9
140	11.3
150	11.7
160	12.0
170	12.4
180	12.8
190	13.1
200	13.5
210	13.8
220	14.1
230	14.4
240	14.7
250	15.1
260	15.4
270	15.7
280	16.0
290	16.2
300	16.5

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TABLE XXI.

Dip of the Sea at different Distances from the
Observer.

Dist. of land in Sea Miles.	Height of the Eye above the Sea in feet.									
	5	10	15	20	25	30	35	40		
0 $\frac{1}{2}$	11'	22'	34'	47'	56'	68'	79'	89'		
0 $\frac{1}{4}$	6	11	17	22	28	34	39	43		
0 $\frac{3}{4}$	4	8	12	15	19	23	27	30		
1 0	4	6	9	12	15	17	20	23		
1 $\frac{1}{4}$	3	5	7	9	12	14	16	19		
1 $\frac{1}{2}$	3	4	6	8	10	11	14	15		
2 0	2	3	5	6	8	10	11	12		
2 $\frac{1}{4}$	2	3	5	6	7	8	9	10		
3 0	2	3	4	5	6	7	8	8		
3 $\frac{1}{4}$	2	3	4	5	6	6	7	7		
4 0	2	3	4	4	5	6	7	7		
5 0	2	3	4	4	5	5	6	6		
6 0	2	3	4	4	5	5	6	6		

TABLE XXIII.

AUGMENTATION OF THE SEMI-DIAMETER OF THE MOON.

Arg. Moon's App. Alt.	Arg. Horizontal Semi-diam. of the Moon.							
	14' 30"	15' 0"	15' 30"	16' 0"	16' 30"	17' 0"		
0'	0'	0'	0'	0'	0'	0'		
1	0	0	1	1	1	1		
2	1	1	2	2	2	2		
3	2	2	2	2	3	3		
4	3	3	3	3	4	4		
5	4	4	4	4	5	5		
6	4	4	5	5	5	6		
7	5	5	6	6	6	7		
8	5	6	6	6	7	7		
9	6	6	7	7	8	8		
10	7	7	8	8	9	9		
11	7	8	8	9	10	10		
12	8	9	9	10	10	11		
13	8	9	10	10	11	12		
14	9	10	10	11	12	12		
15	9	10	11	12	12	13		
16	10	11	12	12	13	14		
17	10	11	12	13	14	14		
18	11	12	13	13	14	15		
19	11	12	13	14	15	16		
20	12	13	14	15	16	17		
21	12	13	14	15	16	17		
22	12	13	14	15	16	17		
23	12	13	14	15	16	17		
24	13	14	15	16	17	18		
25	13	14	15	16	17	18		
26	13	14	15	16	17	18		
27	13	14	15	16	17	18		
28	13	14	15	16	17	18		
29	13	14	15	16	17	18		
30	13	14	16	17	18	19		
31	13	14	16	17	18	19		
32	13	14	16	17	18	19		
33	13	14	16	17	18	19		
34	13	14	16	17	18	19		
35	13	14	16	17	18	19		
36	13	14	16	17	18	19		
37	13	14	16	17	18	19		
38	13	14	16	17	18	19		
39	13	14	16	17	18	19		
40	13	14	16	17	18	19		

TABLE XXII.

The Semi-diameter of
the Sun.

Month	Day.	Sun's Semi-diam.
January.	1	16' 19"
	7	16 19
	13	16 19
	19	16 18
	25	16 17
February.	1	16 16
	7	16 15
	13	16 14
	19	16 13
	25	16 12
March.	1	16 10
	7	16 9
	13	16 7
	19	16 6
	25	16 4
April.	1	16 2
	7	16 1
	13	15 59
	19	15 57
	25	15 56
May.	1	15 54
	7	15 53
	13	15 52
	19	15 51
	25	15 50
June.	1	15 49
	7	15 48
	13	15 47
	19	15 47
	25	15 47
July.	1	15 47
	7	15 47
	13	15 47
	19	15 48
	25	15 48
August.	1	15 49
	7	15 50
	13	15 51
	19	15 52
	25	15 53
September.	1	15 55
	7	15 56
	13	15 58
	19	15 59
	25	16 1
October.	1	16 3
	7	16 4
	13	16 6
	19	16 8
	25	16 9
November.	1	16 11
	7	16 13
	13	16 14
	19	16 15
	25	16 16
December.	1	16 17
	7	16 18
	13	16 18
	19	16 19
	25	16 19

TABLE XXIV.

DECLINATION OF THE SUN, FOR THE YEAR 1803,

(or 1807, 1811, 1815,)

BEING THE FIRST BEFORE LEAP YEAR.

days	MONTHS.											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	South.	South.	S. & N.	North.	North.	North.	North.	North.	N. & S.	South.	South.	South.
1	23° 4'	17° 17'	7° 49'	4° 17'	14° 52'	21° 58'	23° 11'	18° 14'	8° 34'	2° 55'	14° 14'	21° 44'
2	22 59	17 0	7 27	4 40	15 10	22 6	23 7	17 59	8 12	3 18	14 33	21 53
3	22 54	16 42	7 4	5 3	15 23	22 14	23 3	17 44	7 50	3 41	14 52	22 2
4	22 48	16 25	6 41	5 26	15 46	22 22	22 58	17 28	7 28	4 5	15 11	22 11
5	22 42	16 7	6 18	5 49	16 3	22 29	22 53	17 12	7 6	4 28	15 30	22 19
6	22 35	15 49	6 55	6 12	16 21	22 36	22 48	16 56	6 44	4 51	15 48	22 27
7	22 28	15 30	5 31	6 35	16 38	22 42	22 42	16 39	6 21	5 14	16 6	22 34
8	22 20	15 11	5 8	6 57	16 54	22 48	22 35	16 23	5 59	5 37	16 24	22 41
9	22 12	14 52	4 45	7 20	17 10	22 53	22 29	16 6	5 36	6 0	16 41	22 47
10	22 4	14 33	4 21	7 42	17 26	22 58	22 22	15 48	5 14	6 23	16 59	22 53
11	21 55	14 14	3 58	8 4	17 42	23 3	22 14	15 31	4 51	6 46	17 16	22 58
12	21 46	13 54	3 34	8 26	17 58	23 7	22 6	15 13	4 28	7 9	17 32	23 3
13	21 36	13 34	3 11	8 48	18 13	23 11	21 58	14 55	4 5	7 31	17 49	23 8
14	21 26	13 14	2 47	9 10	18 28	23 15	21 49	14 37	3 42	7 54	18 5	23 12
15	21 15	12 54	2 23	9 31	18 42	23 18	21 40	14 18	3 19	8 16	18 20	23 16
16	21 4	12 33	2 0	9 53	18 57	23 21	21 31	14 0	2 56	8 38	18 36	23 19
17	20 53	12 12	1 36	10 14	19 11	23 23	21 21	13 41	2 33	9 1	18 51	23 22
18	20 41	11 51	1 12	10 35	19 24	23 25	21 11	13 21	2 9	8 23	19 6	23 24
19	20 28	11 30	0 49	10 56	19 37	23 26	21 1	13 2	1 46	9 45	19 20	23 26
20	20 16	11 9	0 25	11 17	19 50	23 27	20 50	12 43	1 23	10 6	19 34	23 27
21	20 3	10 47	0 1	11 38	20 3	23 28	20 39	12 23	0 59	10 28	19 48	23 28
22	19 50	10 25	0 22	11 58	20 15	23 28	20 27	12 3	0 36	10 49	20 1	23 28
23	19 36	10 4	0 46	12 18	20 27	23 28	20 15	11 43	0 13	11 11	20 14	23 28
24	19 22	9 42	1 10	12 38	20 39	23 27	20 3	11 23	0 11S	11 32	20 27	23 27
25	19 7	9 19	1 33	12 58	20 50	23 26	19 51	11 2	0 34	11 53	20 39	23 26
26	18 52	8 57	1 57	13 18	21 1	23 25	19 33	10 41	0 58	12 14	20 51	23 25
27	18 37	8 35	2 20	13 37	21 11	23 23	19 25	10 20	1 21	12 34	21 2	23 23
28	18 22	8 12	2 44	13 56	21 21	23 20	19 11	9 59	1 45	12 54	21 13	23 20
29	18 6		3 7	14 15	21 31	23 18	18 57	9 38	2 8	13 15	21 24	23 17
30	17 50		3 31	14 34	21 41	23 15	18 43	9 17	2 31	13 35	21 34	23 14
31	17 34		3 54		21 50		18 29	8 55		13 54		23 10

TABLE XXV.

CHANGE OF THE SUN'S DECLINATION FOR PERIODS OF FOUR YEARS.

Periods of complete Years.	MONTHS.															Periods of complete Years.
	JANUARY.					FEBRUARY.					MARCH.					
	Days.					Days.					Days.					
	1	7	13	19	25	1	7	13	19	25	1	7	13	19	25	
4	—	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	4
8	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.4	8
12	0.4	0.7	0.9	1.1	1.3	1.5	1.6	1.7	1.9	2.0	2.0	2.1	2.1	2.1	2.1	12
16	0.6	0.9	1.2	1.4	1.7	2.0	2.2	2.3	2.5	2.6	2.7	2.7	2.8	2.8	2.8	16
20	0.7	1.1	1.5	1.8	2.1	2.5	2.7	2.9	3.1	3.3	3.4	3.5	3.5	3.6	3.6	20

TABLE XXIV.

DECLINATION OF THE SUN, FOR THE YEAR 1804,

(or 1808, 1812, 1816.)

BEING LEAP YEAR.

days	MONTHS.											
	Jan.	Feb.	March	April	May.	June.	July.	Aug.	Sept.	Octr.	Nov.	Dec.
	South.	South.	S. & N.	North.	North.	North.	North.	North.	N. & S.	South.	South.	South.
1	23° 5'	17° 21'	7° 32'	4° 35'	15° 6'	22° 4'	23° 8'	18° 3'	8° 17'	3° 12'	14° 29'	21° 51'
2	23 1	17 4	7 9	4 58	15 24	22 12	23 4	17 47	7 55	3 36	14 48	22 0
3	22 55	16 47	6 46	5 21	15 42	22 20	22 59	17 32	7 33	3 59	15 7	22 9
4	22 50	16 29	6 23	5 44	15 59	22 27	22 54	17 16	7 11	4 22	15 25	22 17
5	22 44	16 11	6 0	6 6	16 16	22 34	22 49	17 0	6 49	4 45	15 44	22 25
6	22 37	15 53	5 37	6 29	16 33	22 40	22 43	16 43	6 27	5 9	16 2	22 32
7	22 30	15 35	5 14	6 52	16 50	22 46	22 37	16 27	6 4	5 32	16 20	22 39
8	22 22	15 16	4 50	7 14	17 7	22 52	22 30	16 10	5 42	5 55	16 37	22 45
9	22 14	14 57	4 27	7 37	17 23	22 57	22 23	15 53	5 19	6 18	16 55	22 51
10	22 6	14 38	4 3	7 59	17 39	23 2	22 16	15 35	4 56	6 40	17 12	22 57
11	21 57	14 18	3 40	8 21	17 54	23 6	22 8	15 17	4 33	7 3	17 28	23 2
12	21 48	13 59	3 16	8 43	18 9	23 10	22 0	14 59	4 10	7 26	17 45	23 7
13	21 38	13 39	2 53	9 5	18 24	23 14	21 51	14 41	3 47	7 48	18 1	23 11
14	21 28	13 19	2 29	9 26	18 39	23 17	21 42	14 23	3 24	8 11	18 17	23 15
15	21 18	12 58	2 5	9 48	18 53	23 20	21 33	14 4	3 1	8 33	18 32	23 18
16	21 7	12 38	1 42	10 9	19 7	23 22	21 24	13 45	2 38	8 55	18 47	23 21
17	20 55	12 17	1 18	10 30	19 21	23 24	21 14	13 26	2 15	9 17	19 2	23 23
18	20 44	11 56	0 54	10 51	19 34	23 26	21 3	13 7	1 52	9 39	19 16	23 25
19	20 31	11 35	0 31	11 12	19 47	23 27	20 52	12 48	1 28	10 1	19 31	23 26
20	20 19	11 14	0 7	11 33	20 0	23 28	20 41	12 28	1 5	10 23	19 44	23 27
21	20 6	10 52	0 17N	11 53	20 12	23 28	20 30	12 8	0 42	10 44	19 58	23 28
22	19 53	10 31	0 40	12 13	20 24	23 28	20 18	11 48	0 18	11 5	20 11	23 28
23	19 39	10 9	1 4	12 33	20 36	23 27	20 6	11 28	0 58	11 27	20 23	23 27
24	19 25	9 47	1 28	12 53	20 47	23 26	19 54	11 7	0 29	11 48	20 36	23 26
25	19 11	9 25	1 51	13 13	20 58	23 25	19 41	10 46	0 52	12 8	20 48	23 25
26	18 56	9 3	2 15	13 32	21 9	23 23	19 28	10 26	1 15	12 29	20 59	23 23
27	18 41	8 40	2 38	13 52	21 19	23 21	19 14	10 5	1 39	12 49	21 10	23 21
28	18 26	8 18	3 2	14 11	21 29	23 18	19 1	9 43	2 2	13 10	21 21	23 18
29	18 10	7 55	3 25	14 29	21 38	23 15	18 47	9 22	2 26	13 30	21 31	23 15
30	17 54		3 48	14 48	21 47	23 12	18 32	9 1	2 49	13 50	21 41	23 11
31	17 38		4 11		21 56		18 18	8 39		14 9		23 7

TABLE XXV.

CHANGE OF THE SUN'S DECLINATION FOR PERIODS OF FOUR YEARS.

Periods of complete Years.	MONTHS.															Periods of complete Years.
	APRIL.					MAY.					JUNE.					
	Days.					Days.					Days.					
	1	7	13	19	25	1	7	13	19	25	1	7	13	19	25	
	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
4	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.1	0.0	0.1	4
8	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.5	0.4	0.2	0.0	0.1	8
12	2.1	2.1	2.0	1.9	1.8	1.7	1.6	1.4	1.2	1.0	0.8	0.5	0.3	0.1	0.2	12
16	2.8	2.7	2.6	2.5	2.4	2.3	2.1	1.9	1.6	1.3	1.0	0.7	0.4	0.1	0.3	16
20	3.5	3.4	3.3	3.2	3.0	2.8	2.6	2.3	2.0	1.6	1.3	0.9	0.5	0.1	0.3	20

TABLE XXIV.

DECLINATION OF THE SUN, FOR THE YEAR 1805,

(OR 1809, 1813, 1817.)

BEING THE FIRST AFTER LEAP YEAR.

days	MONTHS.											
	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	South.	South.	S. & N.	North.	North.	North.	North.	North.	N. & S.	South.	South.	South.
1	23° 2'	17° 8'	7° 38'	4° 29'	15° 2'	22° 2'	23° 9'	18° 6'	8° 23'	3° 7'	14° 24'	21° 49'
2	22 57	16 51	7 15	4 52	15 20	22 10	23 5	17 51	8 1	3 30	14 43	21 57
3	22 51	16 33	6 52	5 15	15 37	22 18	23 0	17 35	7 39	3 53	15 2	22 7
4	22 45	16 15	6 29	5 38	15 55	22 25	22 55	17 20	7 17	4 17	15 21	22 15
5	22 38	15 57	6 6	6 1	16 12	22 32	22 50	17 4	6 54	4 40	15 39	22 23
6	22 31	15 39	5 43	6 24	16 29	22 39	22 44	16 47	6 32	5 3	15 57	22 30
7	22 24	15 20	5 19	6 46	16 46	22 45	22 38	16 31	6 10	5 26	16 15	22 37
8	22 16	15 1	4 56	7 9	17 3	22 51	22 32	16 14	5 47	5 45	16 33	22 44
9	22 8	14 42	4 33	7 31	17 19	22 56	22 25	15 57	5 25	6 12	16 50	22 50
10	21 59	14 23	4 9	7 53	17 35	23 1	22 18	15 39	5 2	6 35	17 7	22 56
11	21 50	14 3	3 46	8 16	17 50	23 5	22 10	15 22	4 39	6 57	17 24	23 1
12	21 40	13 44	3 22	8 37	18 6	23 9	22 2	15 4	4 16	7 20	17 41	23 6
13	21 30	13 24	2 58	8 59	18 21	23 13	21 53	14 46	3 53	7 43	17 57	23 10
14	21 20	13 3	2 35	9 21	18 35	23 16	21 45	14 27	3 30	8 5	18 13	23 14
15	21 9	12 43	2 11	9 43	18 50	23 19	21 35	14 9	3 7	8 27	18 28	23 17
16	20 58	12 22	1 48	10 4	19 4	23 22	21 26	13 50	2 44	8 50	18 43	23 20
17	20 46	12 1	1 24	10 25	19 17	23 24	21 16	13 31	2 21	9 12	18 58	23 23
18	20 34	11 40	1 0	10 46	19 31	23 25	21 6	13 12	1 57	9 34	19 13	23 25
19	20 22	11 19	0 36	11 7	19 44	23 27	20 55	12 52	1 34	9 56	19 27	23 26
20	20 9	10 57	0 13	11 28	19 57	23 27	20 44	12 33	1 11	10 17	19 41	23 27
21	19 56	10 36	0 11N	11 48	20 9	23 28	20 33	12 13	0 47	10 39	19 55	23 28
22	19 42	10 14	0 35	12 8	20 21	23 28	20 21	11 53	0 24	11 0	20 8	23 28
23	19 28	9 52	0 58	12 28	20 33	23 27	20 9	11 32	0 1	11 21	20 20	23 27
24	19 14	9 30	1 22	12 48	20 44	23 27	19 57	11 12	0 23S	11 42	20 33	23 27
25	19 0	9 8	1 45	13 8	20 55	23 25	19 44	10 51	0 46	12 3	20 45	23 25
26	18 45	8 46	2 9	13 28	21 6	23 24	19 31	10 31	1 10	12 24	20 56	23 23
27	18 29	8 23	2 32	13 47	21 16	23 21	19 18	10 10	1 33	12 45	21 8	23 21
28	18 14	8 0	2 56	14 6	21 26	23 19	19 4	9 49	1 57	13 5	21 19	23 18
29	17 58		3 19	14 25	21 36	23 16	18 50	9 27	2 20	13 25	21 29	23 15
30	17 41		3 43	14 43	21 45	23 13	18 36	9 6	2 43	13 45	21 39	23 12
31	17 25		4 6		21 54		18 21	8 44		14 4		23 8

TABLE XXV.

CHANGE OF THE SUN'S DECLINATION FOR PERIODS OF FOUR YEARS.

Periods of complete Years.	M O N T H S.															Periods of complete Years.
	JULY.					AUGUST.					SEPTEMBER.					
	Days.					Days.					Days.					
	1	7	13	19	25	1	7	13	19	25	1	7	13	19	25	
4	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	+	4
8	0.3	0.4	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.4	8
12	0.4	0.7	0.9	1.1	1.3	1.5	1.6	1.8	1.9	2.0	2.0	2.1	2.1	2.1	2.1	12
16	0.6	0.9	1.2	1.4	1.7	2.0	2.2	2.4	2.5	2.6	2.7	2.8	2.8	2.9	2.9	16
20	0.7	1.1	1.5	1.8	2.2	2.5	2.7	3.0	3.2	3.3	3.4	3.5	3.5	3.6	3.6	20

TABLE XXIV.

DECLINATION OF THE SUN, FOR THE YEAR 1806,

(OR 1810, 1814, 1818.)

BEING THE SECOND AFTER LEAP YEAR.

days	MONTHS.											
	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	South.	South.	S. & N.	North	North.	North.	North.	North.	N. & S.	Seuth.	South.	South.
1	23° 3'	17° 12'	7° 43'	4° 23'	14° 57'	22° 0'	23° 10'	18° 10'	8° 28'	3° 1'	14° 19'	21° 46'
2	22 58	16 55	7 21	4 47	15 15	22 8	23 6	17 55	8 6	3 24	14 38	21 55
3	22 53	16 38	6 58	5 10	15 33	22 16	23 2	17 39	7 44	3 48	14 57	22 4
4	22 47	16 20	6 35	5 33	15 51	22 24	22 57	17 24	7 22	4 11	15 16	22 13
5	22 40	16 2	6 12	5 55	16 8	22 31	22 52	17 8	7 0	4 34	15 35	22 21
6	22 33	15 44	5 48	6 18	16 25	22 37	22 46	16 52	6 38	4 57	15 53	22 28
7	22 26	15 25	5 25	6 41	16 42	22 43	22 40	16 35	6 15	5 20	16 11	22 35
8	22 18	15 6	5 2	7 3	16 59	22 49	22 34	16 18	5 53	5 43	16 29	22 42
9	22 10	14 47	4 38	7 26	17 15	22 55	22 27	16 1	5 30	6 6	16 46	22 48
10	22 1	14 28	4 15	7 48	17 31	23 0	22 20	15 44	5 7	6 29	17 3	22 54
11	21 52	14 8	3 51	8 10	17 47	23 4	22 12	15 26	4 45	6 52	17 20	23 0
12	21 43	13 49	3 28	8 32	18 2	23 8	22 4	15 9	4 22	7 15	17 37	23 5
13	21 33	13 20	3 4	8 54	18 17	23 12	21 56	14 51	3 59	7 37	17 53	23 9
14	21 23	13 8	2 41	9 16	18 32	23 16	21 47	14 32	3 36	8 0	18 9	23 13
15	21 12	12 48	2 17	9 37	18 46	23 19	21 38	14 14	3 13	8 22	18 25	23 17
16	21 1	12 27	1 53	9 59	19 0	23 21	21 28	13 55	2 50	8 44	18 40	23 20
17	20 49	12 6	1 30	10 20	19 14	23 23	21 18	13 36	2 26	9 7	18 55	23 22
18	20 37	11 45	1 6	10 41	19 28	23 25	21 8	13 17	2 3	9 29	19 9	23 24
19	20 25	11 24	0 42	11 2	19 41	23 26	20 58	12 57	1 40	9 50	19 24	23 26
20	20 12	11 3	0 19	11 23	19 54	23 27	20 47	12 38	1 16	10 12	19 38	23 27
21	19 59	10 41	0 5N	11 43	20 6	23 28	20 36	12 18	1 53	10 34	19 52	23 28
22	19 46	10 20	0 29	12 4	20 18	23 28	20 24	11 58	0 30	10 55	20 5	23 28
23	19 32	9 58	0 52	12 24	20 30	23 28	20 12	11 38	0 6	11 16	20 18	23 28
24	19 18	9 36	1 16	12 44	20 42	23 27	20 0	11 17	0 17S	11 37	20 30	23 27
25	19 3	9 13	1 40	13 3	20 53	23 26	19 47	10 57	0 41	11 58	20 42	23 26
26	18 48	8 51	2 3	13 23	21 4	23 24	19 34	10 36	1 4	12 19	20 54	23 24
27	18 33	8 29	2 27	13 42	21 14	23 22	19 21	10 15	1 28	12 40	21 5	23 22
28	18 18	8 6	2 50	14 1	21 24	23 20	19 7	9 54	1 51	13 0	21 16	23 19
29	18 2		3 14	14 20	21 34	23 17	18 53	9 33	2 14	13 20	21 27	23 16
30	17 46		3 37	14 39	21 43	23 14	18 39	9 11	2 38	13 40	21 37	23 13
31	17 29		4 0		21 52		18 25	8 50		14 0		23 9

TABLE XXV.

CHANGE OF THE SUN'S DECLINATION FOR PERIODS OF FOUR YEARS.

Periods of complete Years.	M O N T H S.															Periods of complete Years.
	OCTOBER.					NOVEMBER.					DECEMBER.					
	Days.					Days.					Days.					
	1	7	13	19	25	1	7	13	19	25	1	7	13	19	25	
4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	—	4
8	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.0	0.0	8
12	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.5	0.4	0.2	0.0	0.1	12
16	2.1	2.0	2.0	1.9	1.8	1.6	1.5	1.3	1.2	1.0	0.7	0.5	0.3	0.1	0.1	16
20	2.8	2.7	2.6	2.5	2.4	2.2	2.0	1.8	1.5	1.3	1.0	0.7	0.4	0.1	0.2	20
24	3.5	3.4	3.3	3.2	3.0	2.8	2.5	2.2	2.0	1.7	1.3	0.9	0.5	0.2	0.3	24

TABLE XXVI.

TO REDUCE THE SUN'S DECLINATION TO ANY GIVEN MERIDIAN, AND TO
ANY GIVEN TIME UNDER THAT MERIDIAN.

		LONGITUDE.																			
Add. in W. Sub. in E.	Add. in W. Sub. in E.	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	Add. in W. Sub. in E.	Add. in W. Sub. in E.
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
December.	20	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	20	20
	19	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	19	23
	18	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	18	24
	17	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	17	25
	16	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	16	26
	15	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.3	15	27
	14	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.4	1.5	14	28
	13	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	13	29
	12	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.8	1.9	2.1	2.2	12	1
	11	0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.1	2.3	2.4	11	2
	10	0.1	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.0	2.2	2.3	2.5	2.6	10	3
	9	0.1	0.3	0.5	0.6	0.8	0.9	1.1	1.3	1.4	1.6	1.7	1.9	2.1	2.2	2.4	2.5	2.7	2.8	9	4
January.	29	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.6	2.9	3.1	3.3	29	5
	28	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	28	6
	27	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	27	7
	26	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	26	8
	25	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	25	9
	24	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	24	10
	23	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	23	11
	22	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	22	12
	21	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	21	13
	20	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	20	14
	19	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	19	15
	18	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	18	16
November.	29	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	29	17
	28	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	28	18
	27	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	27	19
	26	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	26	20
	25	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	25	21
	24	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	24	22
	23	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	23	23
	22	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	22	24
	21	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	21	25
	20	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	20	26
	19	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	19	27
	18	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	18	28
October.	29	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	29	29
	28	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	28	30
	27	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	27	31
	26	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	26	1
	25	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	25	2
	24	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	24	3
	23	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	23	4
	22	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	22	5
	21	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	21	6
	20	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	20	7
	19	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	19	8
	18	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	18	9
September.	29	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	29	10
	28	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	28	11
	27	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	27	12
	26	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	26	13
	25	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	25	14
	24	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	24	15
	23	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	23	16
	22	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	22	17
	21	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	21	18
	20	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	20	19
	19	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	19	20
	18	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	18	21
August.	29	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	29	22
	28	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	28	23
	27	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	27	24
	26	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	26	25
	25	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	25	26
	24	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	24	27
July.	29	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	29	28
	28	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	28	29
	27	0.2	0.4	0.6	0.8	1.0	1.2	1.4</													

RIGHT ASCENSIONS AND DECLINATIONS OF THE PRINCIPAL FIXED STARS,
ADAPTED TO THE BEGINNING OF THE YEAR 1805.

Names of Stars.	Mag.	Right Ascension in Time.	Ann. Var.	Declination.	Ann. Var.
γ Pegasi..... <i>Algenib</i>	2	0h 3' 12"	3.06	14° 5' 55" N.	+ 20.0
α Cassiopeie..... <i>Schedar</i>	3	0 29 30	3.31	55 27 58 N.	+ 19.9
α Ursæ Minoris..... <i>Alruccabab</i> , p. Star	2.3	0 53 25	12.89	88 16 3 N.	+ 19.6
β Andromedæ..... <i>Miracè</i>	2	0 58 50	3.30	34 35 10 N.	+ 19.4
α Eridani..... <i>Achernar</i>	1	1 30 26	2.25	58 18 10 S.	- 18.5
γ Andromedæ..... <i>Almach</i>	2	1 51 59	3.61	41 23 17 N.	+ 17.7
α Arietis *.....	2.3	1 56 12	3.33	22 32 8 N.	+ 17.5
α Ceti..... <i>Menkar</i>	2	2 52 6	3.12	3 20 11 N.	+ 14.6
β Persei..... <i>Algol</i>	Vari.	2 55 31	3.85	40 11 44 N.	+ 14.4
α Pleiadum..... <i>Alcyone</i>	3	3 35 35	3.54	23 29 36 N.	+ 11.7
α Tauri *..... <i>Aldebaran</i>	1	4 24 44	3.42	16 6 24 N.	+ 8.1
α Aurigæ..... <i>Capella</i>	1	5 2 18	4.41	45 47 16 N.	+ 5.0
β Orionis..... <i>Rigel</i>	1	5 5 9	2.87	8 26 10 S.	- 4.8
β Tauri.....	2	5 13 58	3.78	28 25 50 N.	+ 4.0
γ Orionis..... <i>Bellatrix</i>	2	5 14 41	3.21	6 9 43 N.	+ 4.0
δ Orionis.....	2	5 22 3	3.06	0 28 9 S.	- 3.3
ϵ Orionis.....	2	5 26 19	3.04	1 20 7 S.	- 3.0
ζ Orionis.....	2	5 30 56	3.02	2 3 19 S.	- 2.6
α Columbæ.....	2	5 32 36	2.17	34 11 3 S.	- 2.4
α Orionis..... <i>Betelgeuse</i>	1	5 44 37	3.24	7 21 34 N.	+ 1.4
α Navis..... <i>Canopus</i>	1	6 19 38	1.33	52 35 36 S.	+ 1.7
α Canis Majoris..... <i>Sirius</i>	1	6 36 33	2.65	16 27 26 S.	+ 4.3
α Geminorum..... <i>Castor</i>	1.2	7 22 8	3.85	32 18 15 N.	- 6.9
α Canis Minoris..... <i>Procyon</i>	1.2	7 29 6	3.14	5 43 34 N.	- 7.5
β Geminorum *..... <i>Pollux</i>	2.3	7 33 21	3.69	28 29 0 N.	- 7.9
γ Navis.....	2	8 18 31	1.25	58 53 15 S.	+ 11.4
α 2 Canori..... <i>Acubens</i>	4.3	8 47 48	3.29	12 36 26 N.	- 13.2
α Hydræ..... <i>Alphard</i>	2	9 18 0	2.93	7 49 10 S.	+ 15.2
α Leonis *..... <i>Regulus</i>	1	9 57 58	3.20	12 54 55 N.	- 17.2
β Ursæ Majoris.....	2	10 49 59	3.71	57 25 36 N.	- 19.1
α Ursæ Majoris..... <i>Dubbe</i>	2.1	10 51 35	3.85	62 48 21 N.	- 19.2
β Leonis..... <i>Deneb</i>	2.1	11 39 5	3.06	15 39 49 N.	- 19.9
γ Corvi..... <i>Algorab</i>	3	12 5 47	3.08	16 27 30 S.	+ 20.0
α Crucis.....	1	12 15 53	3.24	62 1 6 S.	+ 20.0
γ Crucis.....	2	12 20 26	3.24	56 1 2 S.	+ 20.0
ϵ Ursæ Majoris..... <i>Aliath</i>	2	12 45 24	2.40	57 1 17 N.	- 19.7
ϵ Virginis..... <i>Vindemiatrix</i>	3	12 52 28	3.00	12 0 41 N.	- 19.5
α Virginis *..... <i>Spica Virginis</i>	1	13 14 56	3.13	10 8 15 S.	+ 18.9
α Ursæ Majoris..... <i>Benetnach</i>	2	13 39 51	2.39	50 17 32 N.	- 18.1
α Bootis..... <i>Arcturus</i>	1	14 6 46	2.72	20 12 10 N.	- 19.1
γ Bootis..... <i>Seginus</i>	3	14 24 13	2.43	39 10 1 N.	- 16.2
α Centauri.....	1	14 26 54	4.45	60 1 57 S.	+ 16.1
α 2 Libræ..... <i>Zubenesh</i>	2.3	14 40 6	3.29	15 13 16 S.	+ 15.3
α Coronæ Borealis..... <i>Alpabacca</i>	2	15 26 26	2.53	27 22 53 N.	- 12.4
β Scorpii.....	2	15 54 7	3.47	19 15 34 S.	+ 10.5
α Scorpii *..... <i>Antares</i>	1	16 17 28	3.64	25 59 5 S.	+ 8.7
α Herculis..... <i>Ras Algethi</i>	2.3	17 5 46	2.73	14 37 22 N.	- 4.7
λ Scorpii..... <i>Lesath</i>	3.2	17 20 23	4.06	36 36 45 S.	+ 3.5
α Ophiuchi..... <i>Ros Altague</i>	2	17 26 43	2.77	12 42 52 N.	- 3.0
γ Draconis..... <i>Rastaben</i>	3	17 52 5	1.29	51 31 2 N.	- 0.7
α Lyræ..... <i>Vega</i>	1	18 30 20	2.03	38 36 27 N.	+ 2.6
β Cygni..... <i>Albireo</i>	3	19 22 51	2.42	27 33 30 N.	+ 7.1
α Aquilæ *..... <i>Altair</i>	1.2	19 41 16	2.92	8 21 39 N.	+ 8.5
α Pavonis.....	1.2	20 10 8	4.84	57 22 28 S.	- 10.7
α Cygni..... <i>Deneb</i>	1.2	20 34 47	2.03	44 35 22 N.	+ 12.5
α Cephei..... <i>Alderamin</i>	3	21 13 54	1.43	61 45 46 N.	+ 15.0
α Crui.....	2	21 55 52	3.85	44 53 43 S.	- 17.1
α Pisc. Australis *..... <i>Fomalhaut</i>	1	22 46 51	3.33	30 39 7 S.	- 19.0
β Pegasi..... <i>Scheat</i>	2	22 54 19	2.87	27 1 33 N.	+ 19.2
α Pegasi *..... <i>Markab</i>	2	22 55 3	2.96	14 9 34 N.	+ 19.2
α Andromedæ..... <i>Alpheratz</i>	2	23 58 19	3.06	28 0 53 N.	+ 20.0

TABLE XXVIII. RIGHT ASCENSION OF THE SUN.

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days	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	18 ^h 43'	20 ^h 56'	22 ^h 49'	0 ^h 43'	2 ^h 34'	4 ^h 36'	6 ^h 41'	8 ^h 45'	10 ^h 42'	12 ^h 30'	14 ^h 26'	16 ^h 30'
2	18 48	21 0	22 53	0 46	2 38	4 41	6 45	8 49	10 45	12 33	14 30	16 34
3	18 52	21 4	22 56	0 50	2 41	4 45	6 49	8 53	10 49	12 37	14 34	16 39
4	18 57	21 8	23 0	0 53	2 45	4 49	6 53	8 57	10 52	12 41	14 38	16 43
5	19 1	21 12	23 4	0 57	2 49	4 53	6 57	9 1	10 56	12 44	14 42	16 47
6	19 5	21 16	23 8	1 1	2 53	4 57	7 1	9 5	11 0	12 48	14 46	16 52
7	19 10	21 20	23 11	1 4	2 57	5 1	7 5	9 9	11 3	12 52	14 50	16 56
8	19 14	21 24	23 15	1 8	3 1	5 5	7 10	9 12	11 7	12 55	14 54	17 0
9	19 19	21 28	23 19	1 12	3 5	5 9	7 14	9 16	11 10	12 59	14 58	17 5
10	19 23	21 32	23 22	1 15	3 8	5 13	7 18	9 20	11 14	13 3	15 2	17 9
11	19 27	21 36	23 26	1 19	3 12	5 18	7 22	9 24	11 18	13 6	15 6	17 14
12	19 32	21 40	23 30	1 23	3 16	5 22	7 26	9 28	11 21	13 10	15 10	17 18
13	19 36	21 44	23 33	1 26	3 20	5 26	7 30	9 31	11 25	13 14	15 14	17 22
14	19 40	21 48	23 37	1 30	3 24	5 30	7 34	9 35	11 28	13 17	15 18	17 27
15	19 45	21 52	23 41	1 34	3 28	5 34	7 38	9 39	11 32	13 21	15 22	17 31
16	19 49	21 56	23 44	1 37	3 32	5 38	7 42	9 43	11 36	13 25	15 26	17 36
17	19 53	22 0	23 48	1 41	3 36	5 43	7 46	9 46	11 39	13 29	15 31	17 40
18	19 57	22 3	23 52	1 45	3 40	5 47	7 50	9 50	11 43	13 32	15 35	17 45
19	20 2	22 7	23 55	1 49	3 44	5 51	7 54	9 54	11 46	13 36	15 39	17 49
20	20 6	22 11	23 59	1 52	3 48	5 55	7 58	9 58	11 50	13 40	15 43	17 53
21	20 10	22 15	0 3	1 56	3 52	5 59	8 2	10 1	11 54	13 44	15 47	17 58
22	20 14	22 19	0 6	2 0	3 56	6 3	8 6	10 5	11 57	13 47	15 51	18 2
23	20 19	22 23	0 10	2 3	4 0	6 7	8 10	10 9	12 1	13 51	15 56	18 7
24	20 23	22 26	0 13	2 7	4 4	6 12	8 14	10 12	12 4	13 55	16 0	18 11
25	20 27	22 30	0 17	2 11	4 8	6 16	8 18	10 16	12 8	13 59	16 4	18 16
26	20 31	22 34	0 21	2 15	4 12	6 20	8 22	10 20	12 12	14 3	16 8	18 20
27	20 35	22 38	0 24	2 19	4 16	6 24	8 26	10 23	12 15	14 7	16 13	18 25
28	20 39	22 42	0 28	2 22	4 20	6 28	8 30	10 27	12 19	14 10	16 17	18 29
29	20 44	22 45	0 32	2 26	4 24	6 32	8 34	10 31	12 22	14 14	16 21	18 33
30	20 48		0 35	2 30	4 28	6 37	8 38	10 34	12 26	14 18	16 26	18 38
31	20 52		0 39		4 32		8 42	10 38		14 22		18 42

TABLE XXIX. EQUATION OF TIME.

days	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	Add	Add	Add	Add	Sub.	Sub.	Add	Add	Sub.	Sub.	Sub.	Sub.
1	3' 33"	13' 53"	12' 39"	3' 57"	3' 6"	2' 37"	3' 20"	5' 55"	0' 12"	10' 22"	16' 15"	10' 39"
2	4 1	14 1	12 26	3 39	3 13	2 28	3 31	5 52	0 31	10 40	16 16	10 16
3	4 30	14 8	12 13	3 21	3 20	2 19	3 43	5 47	0 50	10 58	16 14	9 52
4	4 57	14 14	12 0	3 8	3 26	2 9	3 54	5 43	1 9	11 16	16 14	9 27
5	5 25	14 20	11 46	2 45	3 32	1 59	4 4	5 37	1 29	11 34	16 13	9 2
6	5 52	14 25	11 32	2 28	3 37	1 48	4 15	5 31	1 48	11 51	16 10	8 37
7	6 18	14 29	11 18	2 10	3 42	1 37	4 25	5 25	2 8	12 8	16 7	8 11
8	6 45	14 33	11 3	1 53	3 46	1 26	4 34	5 17	2 28	12 25	16 2	7 44
9	7 10	14 35	10 48	1 36	3 49	1 14	4 44	5 10	2 49	12 41	15 57	7 17
10	7 35	14 37	10 32	1 20	3 52	1 3	4 52	5 1	3 9	12 57	15 51	6 50
11	8 0	14 38	10 16	1 3	3 54	0 51	5 1	4 52	3 30	13 12	15 45	6 22
12	8 24	14 38	10 0	0 47	3 56	0 38	5 9	4 43	3 51	13 27	15 37	5 54
13	8 47	14 37	9 43	0 32	3 57	0 26	5 16	4 33	4 11	13 41	15 29	5 26
14	9 10	14 36	9 26	0 16	3 57	0 14	5 23	4 22	4 32	13 55	15 20	4 57
15	9 32	14 34	9 9	0 1	3 57	0 1	5 30	4 11	4 54	14 8	15 10	4 28
16	9 54	14 31	8 52	Sub 14	3 57	add 12	5 36	3 59	5 15	14 21	14 59	3 59
17	10 15	14 27	8 34	0 28	3 56	0 24	5 41	3 46	5 36	14 33	14 47	3 30
18	10 35	14 23	8 17	0 42	3 54	0 37	5 46	3 33	5 57	14 45	14 35	3 0
19	10 54	14 18	7 59	0 56	3 52	0 50	5 50	3 20	6 18	14 56	14 21	2 30
20	11 12	14 12	7 40	1 9	3 49	1 3	5 54	3 6	6 39	15 6	14 7	2 0
21	11 30	14 5	7 22	1 22	3 46	1 16	5 57	2 52	7 0	15 16	13 52	1 30
22	11 47	13 58	7 4	1 35	3 42	1 29	6 0	2 37	7 21	15 25	13 36	1 0
23	12 3	13 50	6 45	1 47	3 38	1 41	6 2	2 22	7 42	15 34	13 19	0 30
24	12 19	13 42	6 26	1 58	3 33	1 54	6 4	2 6	8 2	15 41	13 2	0 0
25	12 33	13 33	6 8	2 10	3 28	2 7	6 5	1 50	8 23	15 48	12 44	add 30
26	12 47	13 23	5 49	2 20	3 22	2 19	6 5	1 34	8 43	15 54	12 25	1 0
27	13 0	13 13	5 30	2 30	3 16	2 32	6 5	1 17	9 3	16 0	12 5	1 29
28	13 12	13 2	5 12	2 40	3 9	2 44	6 4	1 0	9 23	16 4	11 45	1 59
29	13 23	12 50	4 53	2 49	3 2	2 56	6 3	0 42	9 43	16 8	11 23	2 29
30	13 34		4 34	2 58	2 54	3 8	6 1	0 24	10 2	16 11	11 1	2 58
31	13 44		4 16				5 58	0 6		16 14		3 07

To Reduce the Time of the Passage of the Moon over the Meridian of Greenwich,
to the Time of its Passage over any other Meridian.

Arg. time fr. moon's south.	Arg. Daily Retardation of the Moon in passing the Meridian.																Arg. Long.
	40'	42'	44'	46'	48'	50'	52'	54'	56'	58'	60'	62'	64'	66'			
0 ^h 0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0°	
0 20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	
0 40	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	10	
1 0	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	15	
1 20	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	20	
1 40	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	25	
2 0	3	3	4	4	4	4	4	4	4	5	5	5	5	5	5	30	
2 20	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	35	
2 40	4	4	5	5	5	5	6	6	6	6	6	7	7	7	7	40	
3 0	5	5	5	6	6	6	6	7	7	7	7	7	8	8	8	45	
3 20	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	50	
3 40	6	6	7	7	7	7	8	8	8	8	9	9	9	9	10	55	
4 0	6	7	7	7	7	8	8	8	9	9	9	10	10	10	11	60	
4 20	7	7	8	8	8	8	9	9	9	10	10	10	11	11	11	65	
4 40	7	8	8	8	9	9	9	10	10	10	11	11	12	12	12	70	
5 0	8	8	9	9	9	10	10	10	11	11	12	12	12	13	13	75	
5 20	8	9	9	9	10	10	11	11	12	12	12	13	13	14	14	80	
5 40	9	10	10	11	11	11	12	12	13	13	14	14	14	15	15	85	
6 0	10	10	11	11	12	12	13	13	13	14	14	15	15	16	16	90	
6 20	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	95	
6 40	11	11	12	12	13	13	14	14	15	15	16	17	17	17	18	100	
7 0	11	12	12	13	14	14	15	15	16	16	17	17	18	18	18	105	
7 20	12	12	13	14	14	15	15	16	16	17	18	18	19	19	19	110	
7 40	12	13	14	14	15	15	16	17	17	18	18	19	20	20	20	115	
8 0	13	14	14	15	15	16	17	17	18	18	19	20	20	21	21	120	
8 20	13	14	15	15	16	17	17	18	19	19	20	21	21	22	22	125	
8 40	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	130	
9 0	14	15	16	17	17	18	19	20	20	21	22	22	23	24	24	135	
9 20	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	140	
9 40	15	16	17	18	19	19	20	21	22	22	23	24	25	26	26	145	
10 0	16	17	18	19	19	20	21	22	22	23	24	25	26	26	27	150	
10 20	16	18	18	19	20	21	22	22	23	24	25	26	27	28	28	155	
10 40	17	18	19	20	21	21	22	23	24	25	26	27	28	29	29	160	
11 0	17	19	20	20	21	22	23	24	25	26	27	28	29	30	30	165	
11 20	18	19	20	21	22	23	24	25	26	27	28	29	30	31	31	170	
11 40	18	20	21	22	23	24	25	26	27	28	29	30	31	31	32	175	
12 0	19	20	21	22	23	24	25	26	27	28	29	30	31	32	32	180	

TABLE XXXI.

Error of Observation arising from an Inclination of the Axis of the Telescope, or
Line of Sight to the Plane of the Sextant.

Arg. Obs. angle.	Arg. INCLINATION.															
	10'	20'	30'	40'	50'	1° 0'	1° 10'	1° 20'	1° 30'	1° 40'	1° 50'	2° 0'				
10°	0' 0"	0' 1"	0' 1"	0' 2"	0' 2"	0' 3"	0' 4"	0' 5"	0' 6"	0' 7"	0' 8"	0' 9"	0' 10"	0' 11"	0' 12"	0' 13"
20	0 0	0 1	0 1	0 2	0 2	0 3	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13
30	0 1	0 2	0 2	0 3	0 3	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13	0 14
40	0 1	0 3	0 3	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13	0 14	0 15	0 16
50	0 1	0 4	0 4	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17
60	0 1	0 5	0 5	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18
70	0 2	0 6	0 6	0 7	0 8	0 9	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19
80	0 2	0 7	0 7	0 8	0 9	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 20
90	0 2	0 8	0 8	0 9	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 20	0 21
100	0 3	0 10	0 10	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 20	0 21	0 22	0 23
110	0 3	0 11	0 11	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 20	0 21	0 22	0 23	0 24
120	0 3	0 12	0 12	0 13	0 14	0 15	0 16	0 17	0 18	0 19	0 20	0 21	0 22	0 23	0 24	0 25

TABLE XXXII.



THE CORRECTION OF THE MOON IN ALTITUDE.

Moon's appar. altitude	Arg. The Moon's Horizontal Parallax.										
	54'	55'	56'	57'	58'	59'	60'	61'	62'		
0°	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	
1°	29	30	31	32	33	34	35	36	37	38	
2	34	35	36	37	38	39	40	41	42	43	
3	38	39	40	41	42	43	44	45	46	47	
4	41	42	43	44	45	46	47	48	49	50	
5	43	44	45	46	47	48	49	50	51	52	
6	44	45	46	47	48	49	50	51	52	53	
7	45	46	47	48	49	50	51	52	53	54	
8	46	47	48	49	50	51	52	53	54	55	
9	47	48	49	49	50	51	52	53	54	55	
10	47	48	49	50	51	52	53	54	55	56	
11	47	48	49	50	51	52	53	54	55	56	
12	47	48	49	50	51	52	53	54	55	56	
13	48	49	50	51	51	52	53	54	55	56	
14	48	49	50	51	52	53	53	54	55	56	
15	48	49	50	51	52	53	53	54	55	56	
16	48	49	50	51	52	52	53	54	55	56	
17	48	49	50	50	51	52	53	54	55	56	
18	47	48	49	50	51	52	53	54	55	56	
19	47	48	49	50	51	52	53	54	55	56	
20	47	48	49	50	51	52	53	54	55	56	
21	47	48	49	50	51	52	53	54	54	55	
22	47	48	49	50	51	52	53	53	54	55	
23	47	47	48	49	50	51	52	53	54	55	
24	46	47	48	49	50	51	52	53	54	55	
25	46	47	48	49	50	51	51	52	53	54	
26	46	47	47	48	49	50	51	52	53	54	
27	45	46	47	48	49	50	51	52	52	53	
28	45	46	47	48	49	49	50	51	52	53	
29	45	46	46	47	48	49	50	51	52	53	
30	44	45	46	47	48	49	49	50	51	52	
31	44	45	46	47	47	48	49	50	51	52	
32	43	44	45	46	47	48	49	49	50	51	
33	43	44	45	45	46	47	48	49	50	51	
34	42	43	44	45	46	47	47	48	49	50	
35	42	43	44	45	45	46	47	48	49	49	
36	42	42	43	44	45	46	46	47	48	49	
37	41	42	43	43	44	45	46	47	47	48	
38	40	41	42	43	44	44	45	46	47	48	
39	40	41	42	42	43	44	45	45	46	47	
40	39	40	41	42	43	43	44	45	46	46	
42	38	39	40	41	42	43	44	44	44	45	
44	37	38	39	39	40	41	41	42	43	44	
46	36	37	37	38	39	39	40	41	41	42	
48	35	35	36	37	37	38	39	39	40	41	
50	33	34	35	35	36	36	37	38	38	39	
52	32	32	33	34	34	35	36	36	37	37	
54	30	31	32	32	33	33	34	35	35	36	
56	29	30	30	31	31	32	32	33	33	34	
58	27	28	29	29	30	30	31	31	32	32	
60	26	26	27	27	28	28	29	29	30	30	
62	24	25	25	26	26	27	27	28	28	29	
64	22	23	24	24	25	25	26	26	27	27	
66	21	22	22	23	23	24	24	24	25	25	
68	19	20	20	21	21	21	22	22	22	23	
70	17	18	18	19	19	19	20	20	21	21	
72	16	16	17	17	17	18	18	18	19	19	
75	13	14	14	14	14	15	15	15	16	16	
80	9	9	9	10	10	10	10	10	10	11	
85	5	5	5	5	5	5	5	5	5	5	
90	0	0	0	0	0	0	0	0	0	0	

TABLE XXXIII.
ACCELERATION
OF THE FIXED STARS.

Part I. for Days.	
Days.	Acceleration.
1	0" 9' 55".9
2	9 7 51.8
3	0 11 47.7
4	0 15 43.6
5	0 19 39.5
6	0 23 35.4
7	0 27 31.3
8	0 31 27.2
9	0 35 23.1
10	0 39 19.0
11	0 43 14.9
12	0 47 10.8
13	0 51 6.7
14	0 55 2.6
15	0 58 58.5
16	1 2 54.4
17	1 6 50.3
18	1 10 46.2
19	1 14 42.1
20	1 18 38.0
21	1 22 33.9
22	1 26 29.8
23	1 30 25.7
24	1 34 21.6
25	1 38 17.5
26	1 42 13.5
27	1 46 9.4
28	1 50 5.3
29	1 54 1.2
30	1 57 57.1
Part II. for Hours.	
Hours.	Acceleration.
1 ^h	0 9".8
2	0 19.7
3	0 29.5
4	0 39.3
5	0 49.1
6	0 59.0
7	1 8.8
8	1 18.6
9	1 28.5
10	1 38.3
11	1 48.1
12	1 57.9
13	2 7.8
14	2 17.6
15	2 27.4
16	2 37.3
17	2 47.1
18	2 56.9
19	3 6.7
20	3 16.6
21	3 26.4
22	3 36.2
23	3 46.1
24	3 55.9

TABLE XXXIV. NATURAL SINES.

Min.	0°		1°		2°		3°		4°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	0	100000	1745	99985	3490	99939	5234	99863	6976	99756	60
1	29	100000	1774	99984	3519	99938	5263	99861	7005	99754	59
2	58	100000	1803	99984	3548	99937	5292	99860	7034	99752	58
3	87	100000	1832	99983	3577	99936	5321	99858	7063	99750	57
4	116	100009	1862	99983	3606	99935	5350	99857	7092	99748	56
5	145	100000	1891	99982	3635	99934	5379	99855	7121	99746	55
6	175	100000	1920	99982	3664	99933	5408	99854	7150	99744	54
7	204	100000	1949	99981	3693	99932	5437	99852	7179	99742	53
8	233	100000	1978	99980	3723	99931	5466	99851	7208	99740	52
9	262	100000	2007	99980	3752	99930	5495	99849	7237	99738	51
10	291	100000	2036	99979	3781	99929	5524	99847	7266	99736	50
11	320	99999	2065	99979	3810	99927	5553	99846	7295	99734	49
12	349	99999	2094	99978	3839	99926	5582	99844	7324	99731	48
13	378	99999	2123	99977	3868	99925	5611	99842	7353	99729	47
14	407	99999	2152	99977	3897	99924	5640	99841	7382	99727	46
15	436	99999	2181	99976	3926	99923	5669	99839	7411	99725	45
16	465	99999	2211	99976	3955	99922	5698	99838	7440	99723	44
17	495	99999	2240	99975	3984	99921	5727	99836	7469	99721	43
18	524	99999	2269	99974	4013	99919	5756	99834	7498	99719	42
19	553	99998	2298	99974	4042	99918	5785	99833	7527	99716	41
20	582	99998	2327	99973	4071	99917	5814	99831	7556	99714	40
21	611	99998	2356	99972	4100	99916	5844	99829	7585	99712	39
22	640	99998	2385	99972	4129	99915	5873	99827	7614	99710	38
23	669	99998	2414	99971	4159	99913	5902	99826	7643	99708	37
24	698	99998	2443	99970	4188	99912	5931	99824	7672	99705	36
25	727	99997	2472	99969	4217	99911	5960	99822	7701	99703	35
26	756	99997	2501	99969	4246	99910	5989	99821	7730	99701	34
27	785	99997	2530	99968	4275	99909	6018	99819	7759	99699	33
28	814	99997	2560	99967	4304	99907	6047	99817	7788	99696	32
29	844	99996	2589	99966	4333	99906	6076	99815	7817	99694	31
30	873	99996	2618	99966	4362	99905	6105	99813	7846	99692	30
31	902	99996	2647	99965	4391	99904	6134	99812	7875	99689	29
32	931	99996	2676	99964	4420	99903	6163	99810	7904	99687	28
33	960	99995	2705	99963	4449	99901	6192	99808	7933	99685	27
34	989	99995	2734	99963	4478	99900	6221	99806	7962	99683	26
35	1018	99995	2763	99962	4507	99898	6250	99804	7991	99680	25
36	1047	99995	2792	99961	4536	99897	6279	99803	8020	99678	24
37	1076	99994	2821	99960	4565	99896	6308	99801	8049	99676	23
38	1105	99994	2850	99959	4594	99894	6337	99799	8078	99673	22
39	1134	99994	2879	99959	4623	99893	6366	99797	8107	99671	21
40	1164	99993	2908	99958	4653	99892	6395	99795	8136	99668	20
41	1193	99993	2938	99957	4682	99890	6424	99793	8165	99666	19
42	1222	99993	2967	99956	4711	99889	6453	99792	8194	99664	18
43	1251	99992	2996	99955	4740	99888	6482	99790	8223	99661	17
44	1280	99992	3025	99954	4769	99886	6511	99788	8252	99659	16
45	1309	99991	3054	99953	4798	99885	6540	99786	8281	99657	15
46	1338	99991	3083	99952	4827	99883	6569	99784	8310	99654	14
47	1367	99991	3112	99952	4856	99882	6598	99782	8339	99652	13
48	1396	99990	3141	99951	4885	99881	6627	99780	8368	99649	12
49	1425	99990	3170	99950	4914	99879	6656	99778	8397	99647	11
50	1454	99989	3199	99949	4943	99878	6685	99776	8426	99644	10
51	1483	99989	3228	99948	4972	99876	6714	99774	8455	99642	9
52	1513	99989	3257	99947	5001	99875	6743	99772	8484	99639	8
53	1542	99988	3286	99946	5030	99873	6773	99770	8513	99637	7
54	1571	99988	3316	99945	5059	99872	6802	99768	8542	99635	6
55	1600	99987	3345	99944	5088	99870	6831	99766	8571	99632	5
56	1629	99987	3374	99943	5117	99869	6860	99764	8600	99630	4
57	1658	99986	3403	99942	5146	99867	6889	99762	8629	99627	3
58	1687	99986	3432	99941	5175	99866	6918	99760	8658	99625	2
59	1716	99985	3461	99940	5205	99864	6947	99758	8687	99622	1
60	1745	99985	3490	99939	5234	99863	6976	99756	8716	99619	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	89°		88°		87°		86°		85°		

TABLE XXXIV. N A T U R A L S I N E S .

159

Min.	50°		60°		70°		80°		90°		
	N. sine	N. cos.	N. sine	N. cos.	N. sine	N. cos.	N. sine	N. cos.	N. sine	N. cos.	
0	8716	99619	10453	99452	12187	99255	13917	99027	15643	98769	60
1	8745	99617	10462	99449	12216	99251	13946	99023	15672	98764	59
2	8774	99614	10511	99446	12245	99248	13975	99019	15701	98760	58
3	8803	99612	10540	99443	12274	99244	14004	99015	15730	98755	57
4	8831	99609	10569	99440	12302	99240	14033	99011	15758	98751	56
5	8860	99607	10597	99437	12331	99237	14061	99006	15787	98746	55
6	8889	99604	10626	99434	12360	99233	14090	99002	15816	98741	54
7	8918	99602	10655	99431	12389	99230	14119	98998	15845	98737	53
8	8947	99599	10684	99428	12418	99226	14148	98994	15873	98732	52
9	8976	99596	10713	99424	12447	99222	14177	98990	15902	98728	51
10	9005	99594	10742	99421	12476	99219	14205	98986	15931	98723	50
11	9034	99591	10771	99418	12504	99215	14234	98982	15959	98718	49
12	9063	99588	10800	99415	12533	99211	14263	98978	15988	98714	48
13	9092	99586	10829	99412	12562	99208	14292	98973	16017	98709	47
14	9121	99583	10858	99409	12591	99204	14320	98969	16046	98704	46
15	9150	99580	10887	99406	12620	99200	14349	98965	16074	98700	45
16	9179	99578	10916	99402	12649	99197	14378	98961	16103	98695	44
17	9208	99575	10945	99399	12678	99193	14407	98957	16132	98690	43
18	9237	99572	10973	99396	12706	99189	14436	98953	16160	98686	42
19	9266	99570	11002	99393	12735	99186	14464	98948	16189	98681	41
20	9295	99567	11031	99390	12764	99182	14493	98944	16218	98676	40
21	9324	99564	11060	99386	12793	99178	14522	98940	16246	98671	39
22	9353	99562	11089	99383	12822	99175	14551	98936	16275	98667	38
23	9382	99559	11118	99380	12851	99171	14580	98931	16304	98662	37
24	9411	99556	11147	99377	12880	99167	14608	98927	16333	98657	36
25	9440	99553	11176	99374	12908	99163	14637	98923	16361	98652	35
26	9469	99551	11205	99370	12937	99160	14666	98919	16390	98648	34
27	9498	99548	11234	99367	12966	99156	14695	98914	16419	98643	33
28	9527	99545	11263	99364	12995	99152	14723	98910	16447	98638	32
29	9556	99542	11291	99360	13024	99148	14752	98906	16476	98633	31
30	9585	99540	11320	99357	13053	99144	14781	98902	16505	98629	30
31	9614	99537	11349	99354	13081	99141	14810	98897	16533	98624	29
32	9642	99534	11378	99351	13110	99137	14838	98893	16562	98619	28
33	9671	99531	11407	99347	13139	99133	14867	98889	16591	98614	27
34	9700	99528	11436	99344	13168	99129	14896	98884	16620	98609	26
35	9729	99526	11465	99341	13197	99125	14925	98880	16648	98604	25
36	9758	99523	11494	99337	13226	99122	14954	98876	16677	98600	24
37	9787	99520	11523	99334	13254	99118	14982	98871	16706	98595	23
38	9816	99517	11552	99331	13283	99114	15011	98867	16734	98590	22
39	9845	99514	11580	99327	13312	99110	15040	98863	16763	98585	21
40	9874	99511	11609	99324	13341	99106	15069	98858	16792	98580	20
41	9903	99508	11638	99320	13370	99102	15097	98854	16820	98575	19
42	9932	99506	11667	99317	13399	99098	15126	98849	16849	98570	18
43	9961	99503	11696	99314	13427	99094	15155	98845	16878	98565	17
44	9990	99500	11725	99310	13456	99091	15184	98841	16906	98561	16
45	10019	99497	11754	99307	13485	99087	15212	98836	16935	98556	15
46	10048	99494	11783	99303	13514	99083	15241	98832	16964	98551	14
47	10077	99491	11812	99300	13543	99079	15270	98827	16992	98546	13
48	10106	99488	11840	99297	13572	99075	15299	98823	17021	98541	12
49	10135	99485	11869	99293	13600	99071	15327	98818	17050	98536	11
50	10164	99482	11898	99290	13629	99067	15356	98814	17078	98531	10
51	10192	99479	11927	99286	13658	99063	15385	98809	17107	98526	9
52	10221	99476	11956	99283	13687	99059	15414	98805	17136	98521	8
53	10250	99473	11985	99279	13716	99055	15442	98800	17164	98516	7
54	10279	99470	12014	99276	13744	99051	15471	98796	17193	98511	6
55	10308	99467	12043	99272	13773	99047	15500	98791	17222	98506	5
56	10337	99464	12071	99269	13802	99043	15529	98787	17250	98501	4
57	10366	99461	12100	99265	13831	99039	15557	98782	17279	98496	3
58	10395	99458	12129	99262	13860	99035	15586	98778	17308	98491	2
59	10424	99455	12158	99258	13889	99031	15615	98773	17336	98486	1
60	10453	99452	12187	99255	13917	99027	15643	98769	17365	98481	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min
	84°		83°		82°		81°		80°		

TABLE XXXIV.
N A T U R A L S I N E S .

Min.	10°		11°		12°		13°		14°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	17365	98181	19081	98163	20791	97815	22495	97437	24192	97030	60
1	17393	98175	19109	98157	20820	97809	22523	97430	24220	97023	59
2	17422	98171	19138	98152	20848	97803	22552	97424	24249	97015	58
3	17451	98166	19167	98146	20877	97797	22580	97417	24277	97008	57
4	17479	98161	19195	98140	20905	97791	22608	97411	24305	97001	56
5	17508	98155	19224	98135	20933	97784	22637	97404	24333	96994	55
6	17537	98150	19252	98129	20962	97778	22665	97398	24362	96987	54
7	17565	98145	19281	98124	20990	97772	22693	97391	24390	96980	53
8	17594	98140	19309	98118	21019	97766	22722	97384	24418	96973	52
9	17623	98135	19338	98112	21047	97760	22750	97378	24446	96966	51
10	17651	98130	19366	98107	21076	97754	22778	97371	24474	96959	50
11	17680	98125	19395	98101	21104	97748	22801	97365	24503	96952	49
12	17708	98120	19423	98096	21132	97742	22835	97358	24531	96945	48
13	17737	98114	19452	98090	21161	97735	22863	97351	24559	96937	47
14	17766	98109	19481	98084	21189	97729	22892	97345	24587	96930	46
15	17794	98104	19509	98079	21218	97723	22920	97338	24615	96923	45
16	17823	98100	19538	98073	21246	97717	22948	97331	24644	96916	44
17	17852	98094	19566	98067	21275	97711	22977	97325	24672	96909	43
18	17880	98089	19595	98061	21303	97705	23005	97318	24700	96902	42
19	17909	98083	19623	98056	21331	97698	23033	97311	24728	96894	41
20	17937	98078	19652	98050	21360	97692	23062	97304	24756	96887	40
21	17966	98073	19680	98044	21388	97686	23090	97298	24784	96880	39
22	17995	98068	19709	98039	21417	97680	23118	97291	24813	96873	38
23	18023	98062	19737	98033	21445	97673	23146	97284	24841	96866	37
24	18052	98057	19766	98027	21474	97667	23175	97278	24869	96858	36
25	18081	98052	19794	98021	21502	97661	23203	97271	24897	96851	35
26	18109	98047	19823	98016	21530	97655	23231	97264	24925	96844	34
27	18138	98041	19851	98010	21559	97648	23260	97257	24954	96837	33
28	18166	98036	19880	98004	21587	97642	23288	97251	24982	96829	32
29	18195	98031	19908	97998	21616	97636	23316	97244	25010	96822	31
30	18224	98025	19937	97992	21644	97630	23345	97237	25038	96815	30
31	18252	98020	19965	97987	21672	97623	23373	97230	25066	96807	29
32	18281	98015	19994	97981	21701	97617	23401	97223	25094	96800	28
33	18309	98010	20022	97975	21729	97611	23429	97217	25122	96793	27
34	18338	98004	20051	97969	21758	97604	23458	97210	25151	96786	26
35	18367	98000	20079	97963	21786	97598	23486	97203	25179	96778	25
36	18395	98004	20108	97958	21814	97592	23514	97196	25207	96771	24
37	18424	98008	20136	97952	21843	97585	23542	97189	25235	96764	23
38	18452	98003	20165	97946	21871	97579	23571	97182	25263	96756	22
39	18481	98007	20193	97940	21899	97573	23599	97176	25291	96749	21
40	18509	98022	20222	97934	21928	97566	23627	97169	25320	96742	20
41	18538	98026	20250	97928	21956	97560	23656	97162	25348	96734	19
42	18567	98021	20279	97922	21985	97553	23684	97155	25376	96727	18
43	18595	98025	20307	97916	22013	97547	23712	97148	25404	96719	17
44	18624	98020	20336	97910	22041	97541	23740	97141	25432	96712	16
45	18652	98024	20364	97905	22070	97534	23769	97134	25460	96705	15
46	18681	98029	20393	97899	22098	97528	23797	97127	25488	96697	14
47	18710	98034	20421	97893	22126	97521	23825	97120	25516	96690	13
48	18738	98029	20450	97887	22155	97515	23853	97113	25545	96682	12
49	18767	98023	20478	97881	22183	97508	23882	97106	25573	96675	11
50	18795	98028	20507	97875	22212	97502	23910	97100	25601	96667	10
51	18824	98022	20535	97869	22240	97496	23938	97093	25629	96660	9
52	18852	98027	20563	97863	22268	97489	23966	97086	25657	96653	8
53	18881	98021	20592	97857	22297	97483	23995	97079	25685	96645	7
54	18910	98016	20620	97851	22325	97476	24023	97072	25713	96638	6
55	18938	98010	20649	97845	22353	97470	24051	97065	25741	96630	5
56	18967	98015	20677	97839	22382	97463	24079	97058	25769	96623	4
57	18995	98019	20706	97833	22410	97457	24108	97051	25798	96615	3
58	19024	98014	20734	97827	22438	97450	24136	97044	25826	96608	2
59	19052	98018	20763	97821	22467	97444	24164	97037	25854	96600	1
60	19081	98003	20791	97815	22495	97437	24192	97030	25882	96593	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	79°		78°		77°		76°		75°		

TABLE XXXIV. NATURAL SINES.

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Min.	15°		16°		17°		18°		19°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	25882	96593	27564	96126	29237	95630	30902	95106	32537	94552	60
1	25910	96585	27592	96118	29265	95622	30929	95097	32584	94542	59
2	25938	96578	27620	96110	29293	95613	30957	95088	32612	94533	58
3	25966	96570	27648	96102	29321	95605	30985	95079	32639	94523	57
4	25994	96562	27676	96094	29348	95596	31012	95070	32667	94514	56
5	26022	96555	27704	96086	29376	95588	31040	95061	32694	94504	55
6	26050	96547	27731	96078	29404	95579	31068	95052	32722	94495	54
7	26079	96540	27759	96070	29432	95571	31095	95043	32749	94485	53
8	26107	96532	27787	96062	29460	95562	31123	95033	32777	94476	52
9	26135	96524	27815	96054	29487	95554	31151	95024	32804	94466	51
10	26163	96517	27843	96046	29515	95545	31178	95015	32832	94457	50
11	26191	96509	27871	96037	29543	95536	31206	95006	32859	94447	49
12	26219	96502	27899	96029	29571	95528	31233	94997	32887	94438	48
13	26247	96494	27927	96021	29599	95519	31261	94988	32914	94428	47
14	26275	96486	27955	96013	29626	95511	31289	94979	32942	94418	46
15	26303	96479	27983	96005	29654	95502	31316	94970	32969	94409	45
16	26331	96471	28011	95997	29682	95493	31344	94961	32997	94399	44
17	26359	96463	28039	95989	29710	95485	31372	94952	33024	94390	43
18	26387	96456	28067	95981	29737	95476	31399	94943	33051	94380	42
19	26415	96448	28095	95972	29765	95467	31427	94933	33079	94370	41
20	26443	96440	28123	95964	29793	95459	31454	94924	33106	94361	40
21	26471	96433	28150	95956	29821	95450	31482	94915	33134	94351	39
22	26500	96425	28178	95948	29849	95441	31510	94906	33161	94342	38
23	26528	96417	28206	95940	29876	95433	31537	94897	33189	94332	37
24	26556	96410	28234	95931	29904	95424	31565	94888	33216	94322	36
25	26584	96402	28262	95923	29932	95415	31593	94878	33244	94313	35
26	26612	96394	28290	95915	29960	95407	31620	94869	33271	94303	34
27	26640	96386	28318	95907	29987	95398	31648	94860	33298	94293	33
28	26668	96379	28346	95898	30015	95389	31675	94851	33326	94284	32
29	26696	96371	28374	95890	30043	95380	31703	94842	33353	94274	31
30	26724	96363	28402	95882	30071	95372	31730	94832	33381	94264	30
31	26752	96355	28429	95874	30098	95363	31758	94823	33408	94254	29
32	26780	96347	28457	95865	30126	95354	31786	94814	33436	94245	28
33	26808	96340	28485	95857	30154	95345	31813	94805	33463	94235	27
34	26836	96332	28513	95849	30182	95337	31841	94795	33490	94225	26
35	26864	96324	28541	95841	30209	95328	31868	94786	33518	94215	25
36	26892	96316	28569	95832	30237	95319	31896	94777	33545	94206	24
37	26920	96308	28597	95824	30265	95310	31923	94768	33573	94196	23
38	26948	96301	28625	95816	30292	95301	31951	94758	33600	94186	22
39	26976	96293	28652	95807	30320	95293	31979	94749	33627	94176	21
40	27004	96285	28680	95799	30348	95284	32006	94740	33655	94167	20
41	27032	96277	28708	95791	30376	95275	32034	94730	33682	94157	19
42	27060	96269	28736	95782	30403	95266	32061	94721	33710	94147	18
43	27088	96261	28764	95774	30431	95257	32089	94712	33737	94137	17
44	27116	96253	28792	95766	30459	95248	32116	94702	33764	94127	16
45	27144	96246	28820	95757	30486	95240	32144	94693	33792	94118	15
46	27172	96238	28847	95749	30514	95231	32171	94684	33819	94108	14
47	27200	96230	28875	95740	30542	95222	32199	94674	33846	94098	13
48	27228	96222	28903	95732	30570	95213	32227	94665	33874	94088	12
49	27256	96214	28931	95724	30597	95204	32254	94656	33901	94078	11
50	27284	96206	28959	95715	30625	95195	32282	94646	33929	94068	10
51	27312	96198	28987	95707	30653	95186	32309	94637	33956	94058	9
52	27340	96190	29015	95698	30680	95177	32337	94627	33983	94049	8
53	27368	96182	29042	95690	30708	95168	32364	94618	34011	94039	7
54	27396	96174	29070	95681	30736	95159	32392	94609	34038	94029	6
55	27424	96166	29098	95673	30763	95150	32419	94599	34065	94019	5
56	27452	96158	29126	95664	30791	95142	32447	94590	34093	94009	4
57	27480	96150	29154	95656	30819	95133	32474	94580	34120	93999	3
58	27508	96142	29182	95647	30846	95124	32502	94571	34147	93989	2
59	27536	96134	29209	95639	30874	95115	32529	94561	34175	93979	1
60	27564	96126	29237	95630	30902	95106	32557	94552	34202	93969	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min
	74°		73°		72°		71°		70°		

TABLE XXXIV. NATURAL SINES.

Min.	20°		21°		22°		23°		24°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	34202	93969	35837	93358	37461	92718	39073	92050	40674	91355	60
1	34229	93959	35864	93348	37488	92707	39100	92039	40700	91343	59
2	34257	93949	35891	93337	37515	92697	39127	92028	40727	91331	58
3	34284	93939	35918	93327	37542	92686	39153	92016	40753	91319	57
4	34311	93929	35945	93316	37569	92675	39180	92005	40780	91307	56
5	34339	93919	35973	93306	37595	92664	39207	91994	40806	91295	55
6	34366	93909	36000	93295	37622	92653	39234	91982	40833	91283	54
7	34393	93899	36027	93285	37649	92642	39260	91971	40860	91272	53
8	34421	93889	36054	93274	37676	92631	39287	91959	40886	91260	52
9	34448	93879	36081	93264	37703	92620	39314	91948	40913	91248	51
10	34475	93869	36108	93253	37730	92609	39341	91936	40939	91236	50
11	34503	93859	36135	93243	37757	92598	39367	91925	40966	91224	49
12	34530	93849	36162	93232	37784	92587	39394	91914	40992	91212	48
13	34557	93839	36190	93222	37811	92576	39421	91902	41019	91200	47
14	34584	93829	36217	93211	37838	92565	39448	91891	41045	91188	46
15	34612	93819	36244	93201	37865	92554	39474	91879	41072	91176	45
16	34639	93809	36271	93190	37892	92543	39501	91868	41098	91164	44
17	34666	93799	36298	93180	37919	92532	39528	91856	41125	91152	43
18	34694	93789	36325	93169	37946	92521	39555	91845	41151	91140	42
19	34721	93779	36352	93159	37973	92510	39581	91833	41178	91128	41
20	34748	93769	36379	93148	37999	92499	39608	91822	41204	91116	40
21	34775	93759	36406	93137	38026	92488	39635	91810	41231	91104	39
22	34803	93748	36434	93127	38053	92477	39661	91799	41257	91092	38
23	34830	93738	36461	93116	38080	92466	39688	91787	41284	91080	37
24	34857	93728	36488	93106	38107	92455	39715	91775	41310	91068	36
25	34884	93718	36515	93095	38134	92444	39741	91764	41337	91056	35
26	34912	93708	36542	93084	38161	92432	39768	91752	41363	91044	34
27	34939	93698	36569	93074	38188	92421	39795	91741	41390	91032	33
28	34966	93688	36596	93063	38215	92410	39822	91729	41416	91020	32
29	34993	93677	36623	93052	38241	92399	39848	91718	41443	91008	31
30	35021	93667	36650	93042	38268	92388	39875	91706	41469	90996	30
31	35048	93657	36677	93031	38295	92377	39902	91694	41496	90984	29
32	35075	93647	36704	93020	38322	92366	39928	91683	41522	90972	28
33	35102	93637	36731	93010	38349	92355	39955	91671	41549	90960	27
34	35130	93626	36758	92999	38376	92343	39982	91660	41575	90948	26
35	35157	93616	36785	92988	38403	92332	40008	91648	41602	90936	25
36	35184	93606	36812	92978	38430	92321	40035	91636	41628	90924	24
37	35211	93596	36839	92967	38456	92310	40062	91625	41655	90911	23
38	35239	93585	36866	92956	38483	92299	40088	91613	41681	90899	22
39	35266	93575	36894	92945	38510	92287	40115	91601	41707	90887	21
40	35293	93565	36921	92935	38537	92276	40141	91590	41734	90875	20
41	35320	93555	36948	92924	38564	92265	40168	91578	41760	90863	19
42	35347	93544	36975	92913	38591	92254	40195	91566	41787	90851	18
43	35375	93534	37002	92902	38617	92243	40221	91555	41813	90839	17
44	35402	93524	37029	92892	38644	92231	40248	91543	41840	90826	16
45	35429	93514	37056	92881	38671	92220	40275	91531	41866	90814	15
46	35456	93503	37083	92870	38698	92209	40301	91519	41892	90802	14
47	35484	93493	37110	92859	38725	92198	40328	91508	41919	90790	13
48	35511	93483	37137	92849	38752	92186	40355	91496	41945	90778	12
49	35538	93472	37164	92838	38778	92175	40381	91484	41972	90766	11
50	35565	93462	37191	92827	38805	92164	40408	91472	41998	90753	10
51	35592	93452	37218	92816	38832	92152	40434	91461	42024	90741	9
52	35619	93441	37245	92805	38859	92141	40461	91449	42051	90729	8
53	35647	93431	37272	92794	38886	92130	40488	91437	42077	90717	7
54	35674	93420	37299	92784	38912	92119	40514	91425	42104	90704	6
55	35701	93410	37326	92773	38939	92107	40541	91414	42130	90692	5
56	35728	93400	37353	92762	38966	92096	40567	91402	42156	90680	4
57	35755	93389	37380	92751	38993	92085	40594	91390	42183	90668	3
58	35782	93379	37407	92740	39020	92073	40621	91378	42209	90655	2
59	35810	93368	37434	92729	39046	92062	40647	91366	42235	90643	1
60	35837	93358	37461	92718	39073	92050	40674	91355	42262	90631	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	69°		68°		67°		66°		65°		

TABLE XXXIV.
N A T U R A L S I N E S .

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Min.	25°		26°		27°		28°		29°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	42362	90631	43837	89879	45399	89101	46947	88295	48481	87462	60
1	42288	90618	43863	89867	45425	89087	46973	88281	48506	87448	59
2	42315	90606	43889	89854	45451	89074	46999	88267	48532	87434	58
3	42341	90594	43916	89841	45477	89061	47024	88254	48557	87420	57
4	42367	90582	43942	89828	45503	89048	47050	88240	48583	87406	56
5	42394	90569	43968	89816	45529	89035	47076	88226	48608	87391	55
6	42420	90557	43994	89803	45554	89021	47101	88213	48634	87377	54
7	42446	90545	44020	89790	45580	89008	47127	88199	48659	87363	53
8	42473	90532	44046	89777	45606	88995	47153	88185	48684	87349	52
9	42499	90520	44072	89764	45632	88981	47178	88172	48710	87335	51
10	42525	90507	44098	89752	45658	88968	47204	88158	48735	87321	50
11	42552	90495	44124	89739	45684	88955	47229	88144	48761	87306	49
12	42578	90483	44151	89726	45710	88942	47255	88130	48786	87292	48
13	42604	90470	44177	89713	45736	88928	47281	88117	48811	87278	47
14	42631	90458	44203	89700	45762	88915	47306	88103	48837	87264	46
15	42657	90446	44229	89687	45787	88902	47332	88089	48862	87250	45
16	42683	90433	44255	89674	45813	88888	47358	88075	48888	87235	44
17	42709	90421	44281	89662	45839	88875	47383	88062	48913	87221	43
18	42736	90408	44307	89649	45865	88862	47409	88048	48938	87207	42
19	42762	90396	44333	89636	45891	88848	47434	88034	48964	87193	41
20	42788	90383	44359	89623	45917	88835	47460	88020	48989	87178	40
21	42815	90371	44385	89610	45942	88822	47486	88006	49014	87164	39
22	42841	90358	44411	89597	45968	88808	47511	87993	49040	87150	38
23	42867	90346	44437	89584	45994	88795	47537	87979	49065	87136	37
24	42894	90334	44464	89571	46020	88782	47562	87965	49090	87121	36
25	42920	90321	44490	89558	46046	88768	47588	87951	49116	87107	35
26	42946	90309	44516	89545	46072	88755	47614	87937	49141	87093	34
27	42972	90296	44542	89532	46097	88741	47639	87923	49166	87079	33
28	42999	90284	44568	89519	46123	88728	47665	87909	49192	87064	32
29	43025	90271	44594	89506	46149	88715	47690	87896	49217	87050	31
30	43051	90259	44620	89493	46175	88701	47716	87882	49242	87036	30
31	43077	90246	44646	89480	46201	88688	47741	87868	49268	87021	29
32	43104	90233	44672	89467	46226	88674	47767	87854	49293	87007	28
33	43130	90221	44698	89454	46252	88661	47793	87840	49318	86993	27
34	43156	90208	44724	89441	46278	88647	47818	87826	49344	86978	26
35	43182	90196	44750	89428	46304	88634	47844	87812	49369	86964	25
36	43209	90183	44776	89415	46330	88620	47869	87798	49394	86949	24
37	43235	90171	44802	89402	46355	88607	47895	87784	49419	86935	23
38	43261	90158	44828	89389	46381	88593	47920	87770	49445	86921	22
39	43287	90146	44854	89376	46407	88580	47946	87756	49470	86906	21
40	43313	90133	44880	89363	46433	88566	47971	87743	49495	86892	20
41	43340	90120	44906	89350	46458	88553	47997	87729	49521	86878	19
42	43366	90108	44932	89337	46484	88539	48022	87715	49546	86863	18
43	43392	90095	44958	89324	46510	88526	48048	87701	49571	86849	17
44	43418	90082	44984	89311	46536	88512	48073	87687	49596	86834	16
45	43445	90070	45010	89298	46561	88499	48099	87673	49622	86820	15
46	43471	90057	45036	89285	46587	88485	48124	87659	49647	86805	14
47	43497	90045	45062	89272	46613	88472	48150	87645	49672	86791	13
48	43523	90032	45088	89259	46639	88458	48175	87631	49697	86777	12
49	43549	90019	45114	89245	46664	88445	48201	87617	49723	86762	11
50	43575	90007	45140	89232	46690	88431	48226	87603	49748	86748	10
51	43602	89994	45166	89219	46716	88417	48252	87589	49773	86733	9
52	43628	89981	45192	89206	46742	88404	48277	87575	49798	86719	8
53	43654	89968	45218	89193	46767	88390	48303	87561	49824	86704	7
54	43680	89956	45243	89180	46793	88377	48328	87546	49849	86690	6
55	43706	89943	45269	89167	46819	88363	48354	87532	49874	86675	5
56	43733	89930	45295	89153	46844	88349	48379	87518	49899	86661	4
57	43759	89918	45321	89140	46870	88336	48405	87504	49924	86646	3
58	43785	89905	45347	89127	46896	88322	48430	87490	49950	86632	2
59	43811	89892	45373	89114	46921	88308	48456	87476	49975	86617	1
60	43837	89879	45399	89101	46947	88295	48481	87462	50000	86603	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	64°		63°		62°		61°		60°		

TABLE XXXIV. NATURAL SINES.

Min.	30°		31°		32°		33°		34°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	50000	86603	51504	85717	52992	84805	54464	83867	55919	82904	60
1	50025	86588	51529	85702	53017	84789	54488	83851	55943	82887	59
2	50060	86573	51554	85687	53041	84774	54513	83835	55968	82871	58
3	50076	86559	51579	85672	53066	84759	54537	83819	55992	82855	57
4	50101	86544	51604	85657	53091	84743	54561	83804	56016	82839	56
5	50126	86530	51628	85642	53115	84728	54586	83788	56040	82822	55
6	50151	86515	51653	85627	53140	84712	54610	83772	56064	82806	54
7	50176	86501	51678	85612	53164	84697	54635	83756	56088	82790	53
8	50201	86486	51703	85597	53189	84681	54659	83740	56112	82773	52
9	50227	86471	51728	85582	53214	84666	54683	83724	56136	82757	51
10	50252	86457	51753	85567	53238	84650	54708	83708	56160	82741	50
11	50277	86442	51778	85551	53263	84635	54732	83692	56184	82724	49
12	50302	86427	51803	85536	53288	84619	54756	83676	56208	82708	48
13	50327	86413	51828	85521	53312	84604	54781	83660	56232	82692	47
14	50352	86398	51852	85506	53337	84588	54805	83645	56256	82675	46
15	50377	86384	51877	85491	53361	84573	54829	83629	56280	82659	45
16	50403	86369	51902	85476	53386	84557	54854	83613	56305	82643	44
17	50428	86354	51927	85461	53411	84542	54878	83597	56329	82626	43
18	50453	86340	51952	85446	53435	84526	54902	83581	56353	82610	42
19	50478	86325	51977	85431	53460	84511	54927	83565	56377	82593	41
20	50503	86310	52002	85416	53484	84495	54951	83549	56401	82577	40
21	50528	86295	52026	85401	53509	84480	54975	83533	56425	82561	39
22	50553	86281	52051	85385	53534	84464	54999	83517	56449	82544	38
23	50578	86266	52076	85370	53558	84448	55024	83501	56473	82528	37
24	50603	86251	52101	85355	53583	84433	55048	83485	56497	82511	36
25	50628	86237	52126	85340	53607	84417	55072	83469	56521	82495	35
26	50654	86222	52151	85325	53632	84402	55097	83453	56545	82478	34
27	50679	86207	52175	85310	53656	84386	55121	83437	56569	82462	33
28	50704	86192	52200	85294	53681	84370	55145	83421	56593	82446	32
29	50729	86178	52225	85279	53705	84355	55169	83405	56617	82429	31
30	50754	86163	52250	85264	53730	84339	55194	83389	56641	82413	30
31	50779	86148	52275	85249	53754	84324	55218	83373	56665	82396	29
32	50804	86133	52299	85234	53779	84308	55242	83356	56689	82380	28
33	50829	86119	52324	85218	53804	84292	55266	83340	56713	82363	27
34	50854	86104	52349	85203	53828	84277	55291	83324	56736	82347	26
35	50879	86089	52374	85188	53853	84261	55315	83308	56760	82330	25
36	50904	86074	52399	85173	53877	84245	55339	83292	56784	82314	24
37	50929	86059	52423	85157	53902	84230	55363	83276	56808	82297	23
38	50954	86045	52448	85142	53926	84214	55388	83260	56832	82281	22
39	50979	86030	52473	85127	53951	84198	55412	83244	56856	82264	21
40	51004	86015	52498	85112	53975	84182	55436	83228	56880	82248	20
41	51029	86000	52522	85096	54000	84167	55460	83212	56904	82231	19
42	51054	85985	52547	85081	54024	84151	55484	83195	56928	82214	18
43	51079	85970	52572	85066	54049	84135	55509	83179	56952	82198	17
44	51104	85956	52597	85051	54073	84120	55533	83163	56976	82181	16
45	51129	85941	52621	85035	54097	84104	55557	83147	57000	82165	15
46	51154	85926	52646	85020	54122	84088	55581	83131	57024	82148	14
47	51179	85911	52671	85005	54146	84072	55605	83115	57047	82132	13
48	51204	85896	52696	84989	54171	84057	55630	83098	57071	82115	12
49	51229	85881	52720	84974	54195	84041	55654	83082	57095	82098	11
50	51254	85866	52745	84959	54220	84025	55678	83066	57119	82082	10
51	51279	85851	52770	84943	54244	84009	55702	83050	57143	82065	9
52	51304	85836	52794	84928	54269	83994	55726	83034	57167	82048	8
53	51329	85821	52819	84913	54293	83978	55750	83017	57191	82032	7
54	51354	85806	52844	84897	54317	83962	55775	83001	57215	82015	6
55	51379	85792	52869	84882	54342	83946	55799	82985	57238	81999	5
56	51404	85777	52893	84866	54366	83930	55823	82969	57262	81982	4
57	51429	85762	52918	84851	54391	83915	55847	82953	57286	81965	3
58	51454	85747	52943	84836	54415	83899	55871	82936	57310	81949	2
59	51479	85732	52967	84820	54440	83883	55895	82920	57334	81932	1
60	51504	85717	52992	84805	54464	83867	55919	82904	57358	81915	0
	N. cos.	N. sine	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	59°		58°		57°		56°		55°		

TABLE XXXIV.
NATURAL SINES.

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Min.	35°		36°		37°		38°		39°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	57358	81915	58779	80902	60182	79864	61566	78801	62932	77715	60
1	57381	81899	58802	80885	60205	79846	61589	78783	62955	77696	59
2	57405	81882	58826	80867	60228	79829	61612	78765	62977	77678	58
3	57429	81865	58849	80850	60251	79811	61635	78747	63000	77660	57
4	57453	81848	58873	80833	60274	79793	61658	78729	63022	77641	56
5	57477	81832	58896	80816	60298	79776	61681	78711	63045	77623	55
6	57501	81815	58920	80799	60321	79758	61704	78694	63068	77605	54
7	57524	81798	58943	80782	60344	79741	61726	78676	63090	77586	53
8	57548	81782	58967	80765	60367	79723	61749	78658	63113	77568	52
9	57572	81765	58990	80748	60390	79706	61772	78640	63135	77550	51
10	57596	81748	59014	80730	60414	79688	61795	78622	63158	77531	50
11	57619	81731	59037	80713	60437	79671	61818	78604	63180	77513	49
12	57643	81714	59061	80696	60460	79653	61841	78586	63203	77494	48
13	57667	81698	59084	80679	60483	79635	61864	78568	63225	77476	47
14	57691	81681	59108	80662	60506	79618	61887	78550	63248	77458	46
15	57715	81664	59131	80644	60529	79600	61909	78532	63271	77439	45
16	57738	81647	59154	80627	60553	79583	61932	78514	63293	77421	44
17	57762	81631	59178	80610	60576	79565	61955	78496	63316	77402	43
18	57786	81614	59201	80593	60599	79547	61978	78478	63338	77384	42
19	57810	81597	59225	80576	60622	79530	62001	78460	63361	77366	41
20	57833	81580	59248	80558	60645	79512	62024	78442	63383	77347	40
21	57857	81563	59272	80541	60668	79494	62046	78424	63406	77329	39
22	57881	81546	59295	80524	60691	79477	62069	78405	63428	77310	38
23	57904	81530	59318	80507	60714	79459	62092	78387	63451	77292	37
24	57928	81513	59342	80489	60738	79441	62115	78369	63473	77273	36
25	57952	81496	59365	80472	60761	79424	62138	78351	63496	77255	35
26	57976	81479	59389	80455	60784	79406	62160	78333	63518	77236	34
27	57999	81462	59412	80438	60807	79388	62183	78315	63540	77218	33
28	58023	81445	59436	80420	60830	79371	62206	78297	63563	77199	32
29	58047	81428	59459	80403	60853	79353	62229	78279	63585	77181	31
30	58070	81412	59482	80386	60876	79335	62251	78261	63608	77162	30
31	58094	81395	59506	80368	60899	79318	62274	78243	63630	77144	29
32	58118	81378	59529	80351	60922	79300	62297	78225	63653	77125	28
33	58141	81361	59552	80334	60945	79282	62320	78206	63675	77107	27
34	58165	81344	59576	80316	60968	79264	62342	78188	63698	77088	26
35	58189	81327	59599	80299	60991	79247	62365	78170	63720	77070	25
36	58212	81310	59622	80282	61015	79229	62388	78152	63742	77051	24
37	58236	81293	59646	80264	61038	79211	62411	78134	63765	77033	23
38	58260	81276	59669	80247	61061	79193	62433	78116	63787	77014	22
39	58283	81259	59693	80230	61084	79176	62456	78098	63810	76996	21
40	58307	81242	59716	80212	61107	79158	62479	78079	63832	76977	20
41	58330	81225	59739	80195	61130	79140	62502	78061	63854	76959	19
42	58354	81208	59763	80178	61153	79122	62524	78043	63877	76940	18
43	58378	81191	59786	80160	61176	79105	62547	78025	63899	76921	17
44	58401	81174	59809	80143	61199	79087	62570	78007	63922	76903	16
45	58425	81157	59832	80125	61222	79069	62592	77988	63944	76884	15
46	58449	81140	59856	80108	61245	79051	62615	77970	63966	76866	14
47	58472	81123	59879	80091	61268	79033	62638	77952	63989	76847	13
48	58496	81106	59902	80073	61291	79016	62660	77934	64011	76828	12
49	58519	81089	59926	80056	61314	78998	62683	77916	64033	76810	11
50	58543	81072	59949	80038	61337	78980	62706	77897	64056	76791	10
51	58567	81055	59972	80021	61360	78962	62728	77879	64078	76772	9
52	58590	81038	59995	80003	61383	78944	62751	77861	64100	76754	8
53	58614	81021	60019	79986	61406	78926	62774	77843	64123	76735	7
54	58637	81004	60042	79968	61429	78908	62796	77824	64145	76717	6
55	58661	80987	60065	79951	61451	78891	62819	77806	64167	76698	5
56	58684	80970	60089	79934	61474	78873	62842	77788	64189	76679	4
57	58708	80953	60112	79916	61497	78855	62864	77769	64212	76661	3
58	58731	80936	60135	79899	61520	78837	62887	77751	64234	76642	2
59	58755	80919	60158	79881	61543	78819	62909	77733	64256	76623	1
60	58779	80902	60182	79864	61566	78801	62932	77715	64279	76604	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min
	54°		53°		52°		51°		50°		

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. HALF ELAPSED TIME.

2 Hours.							3 Hours.						
M.	0'	10'	20'	30'	40'	50'	M.	0'	10'	20'	30'	40'	50'
0	0.30103	30048	29994	29939	29885	29831	0	1.5051	15020	14988	14957	14926	14894
1	29776	29722	29668	29614	29560	29507	1	14863	14832	14800	14769	14738	14707
2	29453	29399	29346	29293	29239	29186	2	14676	14645	14614	14583	14552	14521
3	29153	29090	29027	28974	28921	28869	3	14490	14460	14429	14398	14368	14337
4	28816	28764	28711	28659	28607	28554	4	14307	14276	14246	14215	14185	14155
5	28502	28450	28398	28346	28295	28243	5	14124	14094	14064	14034	14004	13974
6	28191	28140	28089	28037	27986	27935	6	13944	13914	13884	13854	13824	13794
7	27884	27833	27782	27731	27680	27630	7	13765	13735	13705	13676	13646	13617
8	27579	27529	27478	27428	27378	27327	8	13587	13558	13528	13499	13470	13441
9	27277	27227	27177	27127	27077	27028	9	13411	13382	13353	13324	13295	13266
10	0.26978	26929	26879	26830	26781	26731	10	0.13287	13208	13179	13150	13121	13093
11	26682	26633	26584	26535	26486	26438	11	13064	13035	13007	12978	12950	12921
12	26389	26340	26292	26244	26195	26147	12	12893	12864	12835	12807	12779	12751
13	26099	26051	26003	25955	25907	25859	13	12723	12695	12666	12638	12610	12582
14	25811	25763	25716	25668	25621	25573	14	12554	12526	12499	12471	12443	12415
15	25526	25479	25432	25385	25338	25291	15	12387	12360	12332	12305	12277	12249
16	25244	25197	25150	25104	25057	25011	16	12222	12195	12167	12140	12113	12085
17	24964	24918	24872	24825	24779	24733	17	12058	12031	12004	11977	11949	11922
18	24687	24641	24595	24550	24504	24458	18	11895	11868	11842	11815	11788	11761
19	24413	24367	24322	24276	24231	24186	19	11734	11708	11681	11654	11628	11601
20	0.24141	24096	24051	24006	23961	23916	20	0.11575	11548	11522	11495	11469	11443
21	23871	23827	23782	23738	23693	23649	21	11416	11390	11364	11338	11312	11285
22	23605	23560	23516	23472	23428	23384	22	11259	11233	11207	11181	11155	11129
23	23340	23296	23252	23209	23165	23122	23	11104	11078	11052	11027	11001	10975
24	23078	23035	22991	22948	22905	22862	24	10950	10924	10899	10873	10848	10822
25	22819	22775	22732	22689	22647	22604	25	10797	10772	10746	10721	10696	10671
26	22561	22519	22476	22433	22391	22349	26	10646	10620	10595	10570	10545	10520
27	22306	22264	22222	22180	22138	22096	27	10495	10471	10446	10421	10396	10371
28	22054	22012	21970	21928	21887	21845	28	10347	10322	10297	10272	10248	10224
29	21803	21762	21720	21679	21638	21596	29	10199	10175	10151	10126	10102	10078
30	0.21555	21514	21473	21432	21391	21350	30	0.10053	10029	10005	99981	99957	99933
31	21309	21269	21228	21187	21147	21106	31	09909	09885	09861	09837	09813	09789
32	21066	21025	20985	20945	20905	20864	32	09765	09741	09718	09694	09670	09647
33	20824	20784	20744	20704	20665	20625	33	09623	09599	09576	09552	09529	09506
34	20585	20545	20506	20466	20427	20387	34	09482	09459	09435	09412	09389	09366
35	20348	20309	20269	20230	20191	20152	35	09343	09319	09296	09273	09250	09227
36	20113	20074	20035	19996	19957	19919	36	09204	09181	09158	09136	09113	09090
37	19880	19841	19803	19764	19726	19687	37	09067	09044	09022	08999	08976	08954
38	19649	19611	19572	19534	19496	19458	38	08931	08909	08886	08864	08842	08819
39	19420	19382	19344	19306	19269	19231	39	08797	08774	08752	08730	08708	08686
40	0.19193	19156	19118	19081	19043	19006	40	0.08664	08641	08619	08597	08575	08553
41	18968	18931	18894	18857	18820	18783	41	08531	08510	08488	08466	08444	08422
42	18746	18709	18672	18635	18598	18561	42	08401	08379	08357	08336	08314	08293
43	18525	18488	18451	18415	18378	18342	43	08271	08250	08228	08207	08185	08164
44	18306	18269	18233	18197	18161	18124	44	08143	08121	08100	08079	08058	08036
45	18089	18053	18017	17981	17945	17909	45	08015	07994	07973	07952	07931	07910
46	17874	17838	17802	17767	17731	17696	46	07889	07868	07848	07827	07806	07785
47	17660	17625	17590	17554	17519	17484	47	07765	07744	07723	07703	07682	07661
48	17449	17414	17379	17344	17309	17274	48	07641	07620	07600	07579	07559	07539
49	17239	17205	17170	17135	17101	17066	49	07518	07498	07478	07458	07437	07417
50	0.17032	16997	16963	16928	16894	16860	50	0.07397	07377	07357	07337	07317	07297
51	16828	16792	16758	16724	16690	16656	51	07277	07257	07237	07217	07197	07178
52	16622	16588	16554	16520	16487	16453	52	07158	07138	07119	07099	07079	07060
53	16419	16386	16352	16319	16285	16252	53	07040	07021	07001	06982	06962	06943
54	16219	16186	16152	16119	16086	16053	54	06923	06904	06885	06865	06846	06827
55	16020	15987	15954	15920	15888	15856	55	06808	06789	06770	06751	06731	06712
56	15824	15790	15758	15725	15692	15660	56	06693	06674	06656	06637	06618	06599
57	15628	15595	15563	15530	15498	15466	57	06580	06561	06543	06524	06505	06487
58	15434	15402	15370	15338	15306	15274	58	06468	06449	06431	06412	06394	06375
59	15242	15210	15178	15146	15115	15083	59	06357	06338	06320	06302	06283	06265

TABLE XXXV.

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TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. HALF ELAPSED TIME.

M.	4 Hours.						M.	5 Hours.					
	0"	10"	20"	30"	40"	50"		0"	10"	20"	30"	40"	50"
0	0.06247	06229	06211	06192	06174	06156	0	0.01506	01497	01489	01480	01472	01464
1	06138	06120	06102	06084	06066	06048	1	01455	01447	01439	01430	01422	01414
2	06030	06012	05995	05977	05959	05941	2	01406	01398	01390	01381	01373	01365
3	05924	05906	05888	05871	05853	05836	3	01357	01349	01341	01333	01325	01317
4	05818	05801	05783	05766	05748	05731	4	01310	01302	01294	01286	01278	01270
5	05714	05696	05679	05662	05645	05627	5	01263	01255	01247	01240	01232	01224
6	05610	05593	05576	05559	05542	05525	6	01217	01209	01202	01194	01187	01179
7	05508	05491	05474	05457	05440	05423	7	01172	01164	01157	01150	01142	01135
8	05406	05389	05373	05356	05340	05323	8	01128	01120	01113	01106	01099	01092
9	05306	05290	05273	05257	05240	05224	9	01084	01077	01070	01063	01056	01049
10	0.05207	05191	05174	05158	05142	05125	10	0.01042	01035	01028	01021	01014	01007
11	05109	05093	05076	05060	05044	05028	11	01000	00993	00987	00980	00973	00966
12	05012	04996	04980	04964	04948	04932	12	00960	00953	00946	00940	00933	00926
13	04916	04900	04884	04868	04852	04837	13	00920	00913	00907	00900	00894	00887
14	04821	04805	04789	04774	04758	04743	14	00881	00874	00868	00862	00855	00848
15	04727	04711	04696	04680	04665	04649	15	00843	00836	00830	00824	00818	00811
16	04634	04619	04603	04588	04573	04557	16	00805	00799	00793	00787	00781	00774
17	04542	04527	04512	04496	04481	04466	17	00769	00763	00757	00751	00745	00739
18	04451	04436	04421	04406	04391	04376	18	00733	00728	00721	00716	00710	00704
19	04361	04346	04332	04317	04302	04287	19	00699	00693	00687	00682	00676	00670
20	0.04272	04258	04243	04228	04214	04199	20	0.00665	00659	00654	00648	00643	00637
21	04185	04170	04155	04141	04127	04112	21	00632	00626	00621	00616	00610	00604
22	04098	04083	04069	04055	04040	04026	22	00600	00594	00589	00584	00579	00573
23	04012	03998	03983	03969	03955	03941	23	00568	00563	00558	00553	00548	00542
24	03927	03913	03899	03885	03871	03857	24	00538	00533	00528	00523	00518	00512
25	03843	03829	03815	03802	03788	03774	25	00508	00504	00499	00494	00489	00483
26	03760	03746	03733	03719	03706	03692	26	00480	00475	00470	00466	00461	00456
27	03678	03665	03651	03638	03624	03611	27	00452	00447	00443	00438	00434	00429
28	03597	03584	03571	03557	03544	03531	28	00425	00420	00416	00412	00407	00402
29	03517	03504	03491	03478	03465	03452	29	00399	00394	00390	00386	00382	00377
30	0.03438	03425	03412	03399	03386	03373	30	0.00373	00369	00365	00361	00357	00352
31	03360	03348	03335	03322	03309	03296	31	00349	00345	00341	00337	00333	00329
32	03283	03271	03258	03245	03233	03220	32	00325	00321	00317	00313	00310	00306
33	03207	03195	03182	03170	03157	03145	33	00302	00298	00295	00291	00287	00283
34	03132	03120	03107	03095	03083	03070	34	00280	00276	00273	00269	00266	00262
35	03058	03046	03034	03021	03009	02997	35	00259	00255	00252	00249	00245	00242
36	02985	02973	02961	02949	02937	02925	36	00239	00235	00232	00229	00225	00222
37	02913	02901	02889	02877	02865	02853	37	00219	00216	00213	00210	00207	00204
38	02841	02829	02818	02806	02794	02783	38	00200	00197	00194	00191	00188	00185
39	02771	02759	02748	02736	02724	02713	39	00183	00180	00177	00174	00171	00168
40	0.02701	02690	02678	02667	02656	02644	40	0.00166	00163	00160	00157	00155	00151
41	02633	02622	02610	02599	02588	02577	41	00149	00147	00144	00142	00139	00137
42	02565	02554	02543	02532	02521	02510	42	00134	00132	00129	00127	00124	00121
43	02499	02488	02477	02466	02455	02444	43	00120	00117	00115	00113	00110	00107
44	02433	02422	02411	02400	02390	02379	44	00106	00104	00102	00100	00097	00094
45	02368	02357	02347	02336	02326	02315	45	00093	00091	00089	00087	00085	00082
46	02304	02294	02283	02273	02262	02252	46	00081	00079	00077	00075	00074	00071
47	02241	02231	02221	02210	02200	02190	47	00070	00068	00066	00065	00063	00061
48	02179	02169	02159	02149	02139	02128	48	00060	00058	00056	00055	00053	00051
49	02118	02108	02098	02088	02078	02068	49	00050	00049	00047	00046	00044	00042
50	0.02058	02048	02038	02028	02018	02009	50	0.00041	00040	00039	00037	00036	00034
51	01999	01989	01979	01969	01960	01950	51	00033	00032	00031	00030	00029	00027
52	01940	01931	01921	01912	01902	01892	52	00026	00025	00024	00023	00022	00020
53	01883	01873	01864	01854	01845	01836	53	00020	00019	00018	00017	00017	00015
54	01826	01817	01808	01798	01789	01780	54	00015	00014	00013	00013	00012	00010
55	01771	01761	01752	01743	01734	01725	55	00010	00010	00009	00008	00008	00006
56	01716	01707	01698	01689	01680	01671	56	00007	00006	00006	00005	00005	00004
57	01662	01653	01644	01635	01626	01618	57	00004	00003	00003	00003	00002	00002
58	01609	01600	01591	01583	01574	01565	58	00002	00001	00001	00001	00001	00000
59	01557	01548	01540	01531	01523	01514	59	00000	00000	00000	00000	00000	00000

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. MIDDLE TIME.

V.	0 Hour.						M.	1 Hour.					
	0'	10'	20'	30'	40'	50'		0'	10'	20'	30'	40'	50'
0	0.0000	16270	46373	63982	76476	86167	0	4.71403	71521	71638	71755	71872	71988
1	2.94085	00779	06578	11694	16269	20408	1	72104	72220	72335	72450	72565	72679
2	3.24187	27663	30882	33878	36681	39315	2	72793	72907	73020	73133	73246	73358
3	4.1796	44144	46371	48490	50510	52440	3	73470	73582	73694	73805	73916	74027
4	5.4289	56061	57764	59403	60982	62506	4	74137	74247	74357	74466	74575	74684
5	6.3978	65402	66781	68117	69413	70672	5	74792	74900	75008	75116	75223	75330
6	7.1895	73085	74242	75370	76469	77542	6	75437	75544	75650	75756	75862	75967
7	7.8588	79609	80607	81583	82537	83471	7	76072	76177	76281	76385	76489	76593
8	8.4985	85280	86157	87017	87860	88686	8	76697	76800	76903	77006	77108	77210
9	8.9498	90294	91076	91845	92600	93341	9	77312	77413	77514	77615	77716	77817
10	3.94071	94788	95494	96188	96872	97545	10	4.77917	78017	78117	78217	78316	78415
11	98207	98860	99503	00136	00761	01376	11	78514	78613	78711	78809	78907	79004
12	4.01983	02581	03172	03754	04329	04896	12	79101	79198	79295	79392	79488	79584
13	05456	06008	06554	07093	07626	08251	13	79680	79776	79871	79966	80061	80156
14	08671	09184	09691	10193	10688	11178	14	80251	80345	80439	80533	80627	80720
15	11663	12142	12616	13085	13549	14007	15	80818	80906	80999	81091	81183	81275
16	14661	14911	15355	15796	16231	16663	16	81367	81459	81550	81641	81732	81823
17	17090	17513	17932	18346	18757	19164	17	81914	82004	82094	82184	82274	82364
18	19567	19967	20363	20755	21142	21528	18	82453	82542	82631	82720	82808	82896
19	21910	22289	22664	23036	23405	23770	19	82984	83072	83160	83247	83334	83421
20	4.24333	24493	24849	25209	25553	25901	20	4.83508	83595	83682	83768	83854	83940
21	26246	26588	26928	27265	27599	27931	21	84026	84111	84196	84281	84366	84451
22	28260	28587	28911	29233	29553	29870	22	84536	84620	84704	84788	84872	84956
23	30185	30497	30807	31115	31421	31725	23	85039	85122	85205	85288	85371	85454
24	32026	32326	32623	32919	33212	33503	24	85536	85618	85700	85782	85864	85945
25	33793	34080	34365	34649	34931	35211	25	86026	86107	86188	86269	86350	86430
26	35489	35765	36040	36313	36584	36853	26	86510	86590	86670	86750	86830	86910
27	37121	37387	37651	37914	38175	38434	27	86989	87068	87147	87226	87304	87382
28	38692	38949	39204	39457	39709	39960	28	87460	87538	87616	87694	87772	87850
29	40209	40456	40702	40947	41190	41432	29	87927	88004	88081	88158	88235	88311
30	4.41673	41912	42150	42386	42622	42856	30	4.88387	88463	88539	88615	88691	88767
31	43088	43320	43550	43779	44007	44233	31	88842	88917	88992	89067	89142	89217
32	44459	44683	44906	45127	45348	45568	32	89291	89365	89439	89513	89587	89661
33	45786	46003	46219	46434	46648	46861	33	89735	89808	89881	89954	90027	90100
34	47073	47284	47494	47702	47910	48117	34	90173	90246	90318	90390	90462	90534
35	48323	48527	48731	48934	49136	49336	35	90606	90678	90750	90821	90892	90963
36	49536	49735	49933	50130	50326	50522	36	91034	91105	91176	91247	91317	91387
37	50716	50910	51102	51294	51485	51675	37	91457	91527	91597	91667	91737	91807
38	51864	52052	52240	52426	52612	52797	38	91876	91945	92014	92083	92152	92221
39	52981	53165	53347	53529	53710	53891	39	92290	92358	92426	92494	92562	92630
40	4.54070	54249	54427	54604	54780	54956	40	4.92698	92766	92834	92901	92968	93035
41	55131	55306	55479	55652	55824	55996	41	93102	93169	93236	93303	93369	93435
42	56166	56336	56506	56674	56842	57010	42	93501	93567	93633	93699	93765	93831
43	57177	57343	57508	57673	57837	58000	43	93897	93962	94027	94092	94157	94222
44	58163	58325	58487	58648	58808	58968	44	94287	94352	94417	94481	94545	94609
45	59127	59285	59443	59600	59757	59913	45	94673	94737	94801	94865	94929	94993
46	60069	60224	60378	60532	60685	60838	46	95056	95119	95182	95245	95308	95371
47	60990	61141	61292	61443	61593	61742	47	95434	95497	95559	95621	95683	95745
48	61891	62039	62187	62334	62481	62627	48	95807	95869	95931	95993	96055	96117
49	62773	62918	63063	63207	63351	63494	49	96178	96239	96300	96361	96422	96483
50	4.63637	63779	63921	64062	64203	64343	50	4.96544	96605	96665	96725	96785	96845
51	64483	64622	64761	64899	65037	65175	51	96906	96966	97026	97086	97145	97204
52	65312	65448	65584	65720	65855	65990	52	97264	97323	97383	97442	97501	97560
53	66125	66259	66392	66525	66658	66790	53	97618	97677	97736	97794	97853	97911
54	66922	67053	67184	67314	67444	67574	54	97969	98027	98085	98143	98201	98259
55	67703	67852	67961	68099	68217	68344	55	98316	98374	98431	98489	98546	98603
56	68871	68997	69122	69248	69374	69509	56	98660	98717	98774	98831	98887	98944
57	69224	69348	69472	69595	69718	69841	57	99000	99057	99113	99169	99225	99281
58	69963	70085	70207	70328	70449	70569	58	99337	99393	99449	99504	99559	99615
59	70689	70809	70928	71047	71166	71285	59	99670	99725	99780	99835	99890	99945

TABLE XXXVI.

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TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. MIDDLE TIME.

2 Hours.							3 Hours.						
M	0"	10"	20"	30"	40"	50"	M	0"	10"	20"	30"	40"	50"
0	5.00000	00055	00109	00164	00218	00272	0	5.15052	15083	15115	15146	15177	15208
1	00337	00381	00435	00489	00543	00596	1	15240	15271	15303	15334	15365	15396
2	00650	00704	00757	00810	00864	00917	2	15427	15458	15489	15520	15551	15582
3	00970	01023	01076	01129	01182	01234	3	15613	15644	15674	15705	15735	15766
4	01287	01339	01392	01444	01496	01549	4	15796	15827	15857	15888	15918	15949
5	01601	01653	01705	01757	01808	01860	5	15979	16009	16039	16069	16099	16129
6	01912	01963	02014	02066	02117	02168	6	16159	16189	16219	16249	16279	16309
7	02219	02270	02321	02372	02423	02473	7	16338	16368	16398	16427	16457	16488
8	02524	02574	02625	02675	02725	02776	8	16516	16545	16575	16604	16633	16663
9	02826	02876	02926	02976	03026	03075	9	16692	16721	16750	16779	16808	16837
10	5.03125	03174	03224	03273	03322	03372	10	5.16866	16895	16924	16953	16982	17011
11	03421	03470	03519	03568	03617	03665	11	17039	17068	17096	17125	17153	17182
12	03714	03763	03811	03859	03908	03956	12	17210	17239	17267	17296	17324	17353
13	04004	04052	04100	04148	04196	04244	13	17380	17409	17437	17465	17493	17522
14	04292	04340	04387	04435	04482	04530	14	17549	17577	17604	17632	17660	17688
15	04577	04624	04671	04718	04765	04812	15	17716	17743	17771	17798	17826	17853
16	04859	04906	04953	04999	05046	05092	16	17881	17908	17936	17963	17990	18018
17	05139	05185	05231	05278	05324	05370	17	18045	18072	18099	18126	18154	18181
18	05416	05462	05508	05553	05599	05645	18	18208	18235	18261	18288	18315	18342
19	05690	05736	05781	05827	05872	05917	19	18369	18395	18422	18449	18475	18502
20	5.05962	06007	06052	06097	06142	06187	20	5.18528	18555	18581	18608	18634	18660
21	06232	06275	06321	06365	06410	06454	21	18687	18713	18739	18765	18791	18817
22	06498	06543	06587	06631	06675	06719	22	18844	18870	18896	18922	18948	18973
23	06763	06807	06851	06894	06938	06981	23	18999	19025	19051	19076	19102	19127
24	07025	07068	07112	07155	07198	07241	24	19153	19179	19204	19230	19255	19281
25	07284	07328	07371	07415	07458	07499	25	19306	19331	19357	19382	19407	19433
26	07542	07584	07627	07670	07712	07754	26	19457	19483	19508	19533	19558	19583
27	07797	07839	07881	07923	07965	08007	27	19608	19632	19657	19682	19707	19732
28	08049	08091	08133	08175	08216	08258	28	19756	19781	19806	19831	19855	19879
29	08300	08341	08383	08424	08465	08507	29	19904	19928	19952	19977	20001	20025
30	5.08548	08589	08630	08671	08712	08753	30	5.20050	20074	20098	20122	20146	20170
31	08794	08834	08875	08916	08956	08997	31	20194	20218	20242	20266	20290	20314
32	09037	09078	09118	09158	09198	09239	32	20338	20362	20385	20409	20433	20456
33	09279	09319	09359	09399	09438	09478	33	20480	20504	20527	20551	20574	20598
34	09518	09558	09597	09637	09676	09716	34	20621	20644	20668	20691	20714	20737
35	09755	09794	09834	09873	09912	09951	35	20760	20783	20807	20830	20853	20876
36	09990	10029	10068	10107	10146	10184	36	20899	20922	20945	20967	20990	21013
37	10223	10262	10300	10339	10377	10416	37	21036	21059	21081	21104	21127	21149
38	10454	10492	10531	10569	10607	10645	38	21172	21194	21217	21239	21261	21284
39	10683	10721	10759	10797	10834	10872	39	21306	21329	21351	21373	21395	21417
40	5.10910	10947	10985	11022	11060	11097	40	5.21439	21462	21484	21506	21528	21550
41	11135	11172	11209	11246	11283	11320	41	21572	21593	21615	21637	21659	21681
42	11357	11394	11431	11468	11505	11542	42	21702	21724	21746	21767	21789	21810
43	11578	11615	11652	11688	11725	11761	43	21832	21853	21875	21896	21918	21939
44	11797	11834	11870	11906	11942	11979	44	21960	21982	22003	22024	22045	22066
45	12014	12050	12086	12122	12158	12194	45	22088	22109	22130	22151	22172	22193
46	12229	12265	12301	12336	12372	12407	46	22214	22235	22255	22276	22297	22318
47	12443	12478	12513	12549	12583	12619	47	22338	22359	22380	22400	22421	22442
48	12654	12689	12724	12759	12794	12829	48	22462	22483	22503	22524	22544	22564
49	12864	12898	12933	12968	13002	13037	49	22585	22605	22625	22645	22666	22686
50	5.13071	13106	13140	13175	13209	13243	50	5.22706	22725	22744	22763	22782	22801
51	13277	13311	13345	13379	13413	13447	51	22826	22846	22866	22886	22906	22925
52	13481	13515	13549	13583	13616	13650	52	22945	22965	22984	23004	23024	23043
53	13684	13717	13751	13784	13818	13851	53	23063	23082	23102	23121	23141	23160
54	13834	13871	13905	13938	14017	14050	54	23180	23199	23218	23238	23257	23276
55	14083	14116	14149	14182	14215	14247	55	23295	23314	23333	23352	23371	23390
56	14280	14313	14345	14378	14411	14443	56	23410	23429	23447	23466	23485	23504
57	14475	14508	14540	14573	14605	14637	57	23523	23542	23560	23579	23598	23617
58	14669	14701	14733	14765	14797	14829	58	23635	23654	23672	23691	23709	23728
59	5.14861	14893	14925	14957	14988	15020	59	5.23746	23765	23783	23801	23820	23838

TABLE XXXIV. NATURAL SINES.

Min.	30°		31°		32°		33°		34°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	50000	86603	51504	85717	52992	84805	54464	83867	55919	82904	60
1	50025	86588	51529	85702	53017	84789	54488	83851	55943	82887	59
2	50050	86573	51554	85687	53041	84774	54513	83835	55968	82871	58
3	50076	86559	51579	85672	53066	84759	54537	83819	55992	82855	57
4	50101	86544	51604	85657	53091	84743	54561	83804	56016	82839	56
5	50126	86530	51628	85642	53115	84728	54586	83788	56040	82822	55
6	50151	86515	51653	85627	53140	84712	54610	83772	56064	82806	54
7	50176	86501	51678	85612	53164	84697	54635	83756	56088	82790	53
8	50201	86486	51703	85597	53189	84681	54659	83740	56112	82773	52
9	50227	86471	51728	85582	53214	84666	54683	83724	56136	82757	51
10	50252	86457	51753	85567	53238	84650	54708	83708	56160	82741	50
11	50277	86442	51778	85551	53263	84635	54732	83692	56184	82724	49
12	50302	86427	51803	85536	53288	84619	54756	83676	56208	82708	48
13	50327	86413	51828	85521	53312	84604	54781	83660	56232	82692	47
14	50352	86398	51853	85506	53337	84588	54805	83645	56256	82675	46
15	50377	86384	51877	85491	53361	84573	54829	83629	56280	82659	45
16	50403	86369	51902	85476	53386	84557	54854	83613	56305	82643	44
17	50428	86354	51927	85461	53411	84542	54878	83597	56329	82626	43
18	50453	86340	51952	85446	53435	84526	54902	83581	56353	82610	42
19	50478	86325	51977	85431	53460	84511	54927	83565	56377	82593	41
20	50503	86310	52002	85416	53484	84495	54951	83549	56401	82577	40
21	50528	86295	52026	85401	53509	84480	54975	83533	56425	82561	39
22	50553	86281	52051	85385	53534	84464	54999	83517	56449	82545	38
23	50578	86266	52076	85370	53558	84448	55024	83501	56473	82528	37
24	50603	86251	52101	85355	53583	84433	55048	83485	56497	82511	36
25	50628	86237	52126	85340	53607	84417	55072	83469	56521	82495	35
26	50654	86222	52151	85325	53632	84402	55097	83453	56545	82478	34
27	50679	86207	52175	85310	53656	84386	55121	83437	56569	82462	33
28	50704	86192	52200	85294	53681	84370	55145	83421	56593	82446	32
29	50729	86178	52225	85279	53705	84355	55169	83405	56617	82429	31
30	50754	86163	52250	85264	53730	84339	55194	83389	56641	82413	30
31	50779	86148	52275	85249	53754	84324	55218	83373	56665	82396	29
32	50804	86133	52299	85234	53779	84308	55242	83356	56689	82380	28
33	50829	86119	52324	85218	53804	84292	55266	83340	56713	82363	27
34	50854	86104	52349	85203	53828	84277	55291	83324	56736	82347	26
35	50879	86089	52374	85188	53853	84261	55315	83308	56760	82330	25
36	50904	86074	52399	85173	53877	84245	55339	83292	56784	82314	24
37	50929	86059	52423	85157	53902	84230	55363	83276	56808	82297	23
38	50954	86045	52448	85142	53926	84214	55388	83260	56832	82281	22
39	50979	86030	52473	85127	53951	84198	55412	83244	56856	82264	21
40	51004	86015	52498	85112	53975	84182	55436	83228	56880	82248	20
41	51029	86000	52522	85096	54000	84167	55460	83212	56904	82231	19
42	51054	85985	52547	85081	54024	84151	55484	83195	56928	82214	18
43	51079	85970	52572	85066	54049	84135	55509	83179	56952	82198	17
44	51104	85955	52597	85051	54073	84120	55533	83163	56976	82181	16
45	51129	85941	52621	85035	54097	84104	55557	83147	57000	82165	15
46	51154	85926	52646	85020	54122	84088	55581	83131	57024	82148	14
47	51179	85911	52671	85005	54146	84072	55605	83115	57047	82132	13
48	51204	85896	52696	84989	54171	84057	55630	83099	57071	82115	12
49	51229	85881	52720	84974	54195	84041	55654	83082	57095	82098	11
50	51254	85866	52745	84959	54220	84025	55678	83066	57119	82082	10
51	51279	85851	52770	84943	54244	84009	55702	83050	57143	82065	9
52	51304	85836	52794	84928	54269	83994	55726	83034	57167	82048	8
53	51329	85821	52819	84913	54293	83978	55750	83017	57191	82032	7
54	51354	85806	52844	84897	54317	83962	55775	83001	57215	82015	6
55	51379	85792	52869	84882	54342	83946	55799	82985	57238	81999	5
56	51404	85777	52893	84866	54366	83930	55823	82969	57262	81982	4
57	51429	85762	52918	84851	54391	83915	55847	82953	57286	81965	3
58	51454	85747	52943	84836	54415	83899	55871	82936	57310	81949	2
59	51479	85732	52967	84820	54440	83883	55895	82920	57334	81932	1
60	51504	85717	52992	84805	54464	83867	55919	82904	57358	81915	0
	N. cos.	N. sine	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	59°		58°		57°		56°		55°		

TABLE XXXIV.
N A T U R A L S I N E S.

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Min.	35°		36°		37°		38°		39°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	57358	81915	58779	80902	60182	79864	61566	78801	62932	77715	60
1	57381	81899	58802	80885	60205	79846	61589	78783	62955	77696	59
2	57405	81882	58826	80867	60228	79829	61612	78765	62977	77678	58
3	57429	81865	58849	80850	60251	79811	61635	78747	63000	77660	57
4	57453	81848	58873	80833	60274	79793	61658	78729	63022	77641	56
5	57477	81832	58896	80816	60298	79776	61681	78711	63045	77623	55
6	57501	81815	58920	80799	60321	79758	61704	78694	63068	77605	54
7	57524	81798	58943	80782	60344	79741	61726	78676	63090	77586	53
8	57548	81782	58967	80765	60367	79723	61749	78658	63113	77568	52
9	57572	81765	58990	80748	60390	79706	61772	78640	63135	77550	51
10	57596	81748	59014	80730	60414	79688	61795	78622	63158	77531	50
11	57619	81731	59037	80713	60437	79671	61818	78604	63180	77513	49
12	57643	81714	59061	80696	60460	79653	61841	78586	63203	77494	48
13	57667	81698	59084	80679	60483	79635	61864	78568	63225	77476	47
14	57691	81681	59108	80662	60506	79618	61887	78550	63248	77458	46
15	57715	81664	59131	80644	60529	79600	61909	78532	63271	77439	45
16	57738	81647	59154	80627	60553	79583	61932	78514	63293	77421	44
17	57762	81631	59178	80610	60576	79565	61955	78496	63316	77402	43
18	57786	81614	59201	80593	60599	79547	61978	78478	63338	77384	42
19	57810	81597	59225	80576	60622	79530	62001	78460	63361	77366	41
20	57833	81580	59248	80558	60645	79512	62024	78442	63383	77347	40
21	57857	81563	59272	80541	60668	79494	62046	78424	63406	77329	39
22	57881	81546	59295	80524	60691	79477	62069	78405	63428	77310	38
23	57904	81530	59318	80507	60714	79459	62092	78387	63451	77292	37
24	57928	81513	59342	80489	60738	79441	62115	78369	63473	77273	36
25	57952	81496	59365	80472	60761	79424	62138	78351	63496	77255	35
26	57976	81479	59389	80455	60784	79406	62160	78333	63518	77236	34
27	57999	81462	59412	80438	60807	79388	62183	78315	63540	77218	33
28	58023	81445	59436	80420	60830	79371	62206	78297	63563	77199	32
29	58047	81428	59459	80403	60853	79353	62229	78279	63585	77181	31
30	58070	81412	59482	80386	60876	79335	62251	78261	63608	77162	30
31	58094	81395	59506	80368	60899	79318	62274	78243	63630	77144	29
32	58118	81378	59529	80351	60922	79300	62297	78225	63653	77125	28
33	58141	81361	59552	80334	60945	79282	62320	78206	63675	77107	27
34	58165	81344	59576	80316	60968	79264	62342	78188	63698	77088	26
35	58189	81327	59599	80299	60991	79247	62365	78170	63720	77070	25
36	58212	81310	59622	80282	61015	79229	62388	78152	63742	77051	24
37	58236	81293	59646	80264	61038	79211	62411	78134	63765	77033	23
38	58260	81276	59669	80247	61061	79193	62433	78116	63787	77014	22
39	58283	81259	59693	80230	61084	79176	62456	78098	63810	76996	21
40	58307	81242	59716	80212	61107	79158	62479	78079	63832	76977	20
41	58330	81225	59739	80195	61130	79140	62502	78061	63854	76959	19
42	58354	81208	59763	80178	61153	79122	62524	78043	63877	76940	18
43	58378	81191	59786	80160	61176	79105	62547	78025	63899	76921	17
44	58401	81174	59809	80143	61199	79087	62570	78007	63922	76903	16
45	58425	81157	59832	80125	61222	79069	62592	77988	63944	76884	15
46	58449	81140	59856	80108	61245	79051	62615	77970	63966	76866	14
47	58472	81123	59879	80091	61268	79033	62638	77952	63989	76847	13
48	58496	81106	59902	80073	61291	79016	62660	77934	64011	76828	12
49	58519	81089	59926	80056	61314	78998	62683	77916	64033	76810	11
50	58543	81072	59949	80038	61337	78980	62706	77897	64056	76791	10
51	58567	81055	59972	80021	61360	78962	62728	77879	64078	76772	9
52	58590	81038	59995	80003	61383	78944	62751	77861	64100	76754	8
53	58614	81021	60019	79986	61406	78926	62774	77843	64123	76735	7
54	58637	81004	60042	79968	61429	78908	62796	77824	64145	76717	6
55	58661	80987	60065	79951	61451	78891	62819	77806	64167	76698	5
56	58684	80970	60089	79934	61474	78873	62842	77788	64190	76679	4
57	58708	80953	60112	79916	61497	78855	62864	77769	64212	76661	3
58	58731	80936	60135	79899	61520	78837	62887	77751	64234	76642	2
59	58755	80919	60158	79881	61543	78819	62909	77733	64256	76623	1
60	58779	80902	60182	79864	61566	78801	62932	77715	64279	76604	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min
	54°		53°		52°		51°		50°		

TABLE XXXIV.
NATURAL SINES.

Min.	40°		41°		42°		43°		44°		
	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	
0	64279	76604	65606	75471	66913	74314	68200	73135	69466	71934	60
1	64301	76586	65628	75452	66935	74295	68221	73116	69487	71914	59
2	64323	76567	65650	75433	66956	74276	68242	73096	69508	71894	58
3	64346	76548	65672	75414	66978	74256	68264	73076	69529	71873	57
4	64368	76530	65694	75395	66999	74237	68285	73056	69549	71853	56
5	64390	76511	65716	75375	67021	74217	68306	73036	69570	71833	55
6	64412	76492	65738	75356	67043	74198	68327	73016	69591	71813	54
7	64435	76473	65759	75337	67064	74178	68349	72996	69612	71792	53
8	64457	76455	65781	75318	67086	74159	68370	72976	69633	71772	52
9	64479	76436	65803	75299	67107	74139	68391	72957	69654	71752	51
10	64501	76417	65825	75280	67129	74120	68412	72937	69675	71732	50
11	64524	76398	65847	75261	67151	74100	68434	72917	69696	71711	49
12	64546	76380	65869	75241	67172	74081	68455	72897	69717	71691	48
13	64568	76361	65891	75222	67194	74061	68476	72877	69737	71671	47
14	64590	76342	65913	75203	67215	74041	68497	72857	69758	71650	46
15	64612	76323	65935	75184	67237	74022	68518	72837	69779	71630	45
16	64635	76304	65956	75165	67258	74002	68539	72817	69800	71610	44
17	64657	76286	65978	75146	67280	73983	68561	72797	69821	71590	43
18	64679	76267	66000	75126	67301	73963	68582	72777	69842	71569	42
19	64701	76248	66022	75107	67323	73944	68603	72757	69862	71549	41
20	64723	76229	66044	75088	67344	73924	68624	72737	69883	71529	40
21	64746	76210	66066	75069	67366	73904	68645	72717	69904	71508	39
22	64768	76192	66088	75050	67387	73885	68666	72697	69925	71488	38
23	64790	76173	66109	75030	67409	73865	68688	72677	69946	71468	37
24	64812	76154	66131	75011	67430	73846	68709	72657	69966	71447	36
25	64834	76135	66153	74992	67452	73826	68730	72637	69987	71427	35
26	64856	76116	66175	74973	67473	73806	68751	72617	70008	71407	34
27	64878	76097	66197	74953	67495	73787	68772	72597	70029	71386	33
28	64901	76078	66218	74934	67516	73767	68793	72577	70049	71366	32
29	64923	76059	66240	74915	67538	73747	68814	72557	70070	71345	31
30	64945	76041	66262	74896	67559	73728	68835	72537	70091	71325	30
31	64967	76022	66284	74876	67580	73708	68857	72517	70112	71305	29
32	64989	76003	66306	74857	67602	73688	68878	72497	70132	71284	28
33	65011	75984	66327	74838	67623	73669	68899	72477	70153	71264	27
34	65033	75965	66349	74818	67645	73649	68920	72457	70174	71243	26
35	65055	75946	66371	74799	67666	73629	68941	72437	70195	71223	25
36	65077	75927	66393	74780	67688	73610	68962	72417	70215	71203	24
37	65100	75908	66414	74760	67709	73590	68983	72397	70236	71182	23
38	65122	75889	66436	74741	67730	73570	69004	72377	70257	71162	22
39	65144	75870	66458	74722	67752	73551	69025	72357	70277	71141	21
40	65166	75851	66480	74703	67773	73531	69046	72337	70298	71121	20
41	65188	75832	66501	74683	67795	73511	69067	72317	70319	71100	19
42	65210	75813	66523	74664	67816	73491	69088	72297	70339	71080	18
43	65232	75794	66545	74644	67837	73472	69109	72277	70360	71059	17
44	65254	75775	66566	74625	67859	73452	69130	72257	70381	71039	16
45	65276	75756	66588	74606	67880	73432	69151	72236	70401	71019	15
46	65298	75738	66610	74586	67901	73413	69172	72216	70422	70998	14
47	65320	75719	66632	74567	67923	73393	69193	72196	70443	70978	13
48	65342	75700	66653	74548	67944	73373	69214	72176	70463	70957	12
49	65364	75680	66675	74528	67965	73353	69235	72156	70484	70937	11
50	65386	75661	66697	74509	67987	73333	69256	72136	70505	70916	10
51	65408	75642	66718	74489	68008	73314	69277	72116	70525	70896	9
52	65430	75623	66740	74470	68029	73294	69298	72095	70546	70875	8
53	65452	75604	66762	74451	68051	73274	69319	72075	70567	70855	7
54	65474	75585	66783	74431	68072	73254	69340	72055	70587	70834	6
55	65496	75566	66805	74412	68093	73234	69361	72035	70608	70813	5
56	65518	75547	66827	74392	68115	73215	69382	72015	70628	70793	4
57	65540	75528	66848	74373	68136	73195	69403	71995	70649	70772	3
58	65562	75509	66870	74353	68157	73175	69424	71974	70670	70752	2
59	65584	75490	66891	74334	68179	73155	69445	71954	70690	70731	1
60	65606	75471	66913	74314	68200	73135	69466	71934	70711	70711	0
	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	N. cos.	N. sine.	Min.
	49°		48°		47°		46°		45°		

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. HALF ELAPSED TIME.

M	O Hour.						M	1 Hour.					
	0'	10'	20'	30'	40'	50'		0'	10'	20'	30'	40'	50'
0		13833	83730	66121	53627	43936	0	58700	58582	58465	58348	58231	58115
1	2.36018	29324	23525	18409	13839	09695	1	57999	57883	57768	57653	57538	57424
2	05916	02440	99221	96225	93422	90790	2	57310	57196	57083	56970	56857	56745
3	1.88307	83959	83732	81613	79593	77663	3	56633	56521	56409	56298	56187	56076
4	75814	74042	72339	70700	69121	67597	4	55966	55856	55746	55637	55528	55419
5	66125	61701	63322	61986	60600	59431	5	55311	55203	55095	54987	54880	54773
6	58208	57018	55861	54733	53634	52561	6	54666	54559	54453	54347	54241	54136
7	51515	50494	49496	48520	47566	46632	7	54031	53926	53822	53718	53614	53510
8	45718	44823	43946	43086	42243	41417	8	53406	53303	53200	53097	52995	52893
9	40605	39809	39027	38258	37503	36761	9	52791	52690	52589	52488	52387	52286
10	1.36032	55315	34609	33915	33231	32558	10	52186	52086	51986	51886	51787	51688
11	31896	31243	30600	29967	29342	28727	11	51589	51490	51392	51294	51196	51099
12	28120	27522	26931	26349	25774	25207	12	51002	50905	50808	50711	50615	50519
13	24647	24095	23549	23010	22477	21952	13	50423	50327	50232	50137	50042	49947
14	21432	20919	20412	19910	19415	18925	14	49852	49758	49664	49570	49476	49383
15	18440	17961	17487	17018	16554	16096	15	49290	49197	49104	49012	48920	48828
16	15642	15192	14748	14307	13872	13440	16	48736	48644	48553	48462	48371	48280
17	13013	12590	12171	11757	11346	10939	17	48189	48099	48009	47919	47829	47739
18	10536	10136	9740	9348	8960	8575	18	47650	47561	47472	47383	47295	47207
19	08193	07814	07439	07067	06698	06333	19	47119	47031	46943	46856	46769	46682
20	1.05970	05610	05254	04901	04550	04202	20	46595	46508	46421	46335	46249	46163
21	03857	03515	03175	02838	02504	02172	21	46077	45992	45907	45822	45737	45652
22	01843	01516	01192	00870	00550	00233	22	45567	45483	45399	45315	45231	45147
23	0.99918	99606	99296	98988	98682	98378	23	45064	44981	44898	44815	44732	44649
24	98077	97777	97480	97184	96891	96600	24	44567	44485	44403	44321	44239	44158
25	96310	96023	95738	95454	95172	94892	25	44077	43996	43915	43834	43753	43673
26	94614	94338	94063	93790	93519	93250	26	43593	43513	43433	43353	43273	43193
27	92982	92716	92452	92189	91928	91669	27	43114	43035	42956	42877	42799	42721
28	91411	91154	90899	90646	90394	90143	28	42643	42565	42487	42409	42331	42253
29	89894	89647	89401	89156	88913	88671	29	42176	42099	42022	41945	41868	41792
30	0.88430	88191	87953	87717	87481	87247	30	41716	41640	41564	41488	41412	41336
31	87015	86783	86553	86324	86096	85870	31	41261	41186	41111	41036	40961	40886
32	85644	85420	85197	84976	84755	84535	32	40812	40738	40664	40590	40516	40442
33	84317	84100	83884	83669	83455	83242	33	40368	40295	40222	40149	40076	40003
34	83030	82819	82609	82401	82193	81986	34	39930	39857	39785	39713	39641	39569
35	81780	81576	81372	81169	80967	80767	35	39497	39425	39353	39282	39211	39140
36	80567	80368	80170	79973	79777	79581	36	39069	38998	38927	38856	38786	38716
37	79387	79193	79001	78809	78618	78428	37	38646	38576	38506	38436	38366	38296
38	78239	78051	77863	77677	77491	77306	38	38227	38158	38089	38020	37951	37882
39	77122	76938	76756	76574	76393	76212	39	37813	37745	37677	37609	37541	37473
40	0.76033	75854	75676	75499	75323	75147	40	37405	37337	37269	37202	37135	37068
41	74972	74797	74624	74451	74279	74107	41	37001	36934	36867	36800	36734	36668
42	73937	73767	73597	73429	73261	73093	42	36602	36536	36470	36404	36338	36272
43	72926	72760	72595	72430	72266	72103	43	36206	36141	36076	36011	35946	35881
44	71940	71778	71616	71455	71295	71135	44	35816	35751	35686	35622	35558	35494
45	70976	70818	70660	70503	70346	70190	45	35430	35366	35302	35238	35174	35110
46	70034	69879	69725	69571	69418	69265	46	35047	34984	34921	34858	34795	34732
47	69113	68960	68801	68640	68481	68321	47	34669	34606	34544	34482	34420	34358
48	68212	68064	67916	67769	67622	67476	48	34296	34234	34172	34110	34048	33986
49	67380	67185	67040	66896	66752	66609	49	33925	33864	33803	33742	33681	33620
50	0.66466	66324	66182	66041	65900	65760	50	33559	33498	33438	33378	33318	33258
51	66520	66381	66242	66104	65966	65828	51	33197	33137	33077	33017	32958	32899
52	64791	64655	64519	64383	64248	64113	52	32839	32780	32720	32661	32602	32543
53	63978	63844	63711	63578	63445	63313	53	32485	32426	32367	32309	32250	32192
54	63181	63050	62919	62789	62659	62529	54	32134	32076	32018	31960	31902	31844
55	62400	62271	62142	62014	61886	61759	55	31787	31729	31672	31614	31557	31500
56	61632	61506	61380	61254	61129	61004	56	31443	31386	31329	31272	31216	31159
57	60879	60755	60631	60508	60385	60262	57	31103	31046	30990	30934	30878	30822
58	60140	60018	59896	59775	59654	59534	58	30766	30710	30655	30600	30544	30488
59	59414	59294	59175	59056	58937	58818	59	30433	30378	30323	30268	30213	30158

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. HALF ELAPSED TIME.

2 Hours.							3 Hours.						
M.	0'	10'	20'	30'	40'	50'	M.	0'	10'	20'	30'	40'	50'
0	0.30103	30048	29994	29939	29885	29831	0	0.15051	15020	14988	14957	14926	14894
1	29776	29722	29668	29614	29560	29507	1	14863	14832	14800	14769	14738	14707
2	29453	29399	29346	29293	29239	29186	2	14676	14645	14614	14583	14552	14521
3	29133	29080	29027	28974	28921	28869	3	14490	14460	14429	14398	14368	14337
4	28816	28764	28711	28659	28607	28554	4	14307	14276	14246	14215	14185	14155
5	28502	28450	28398	28346	28295	28243	5	14124	14094	14064	14034	14004	13974
6	28191	28140	28089	28037	27986	27935	6	13944	13914	13884	13854	13824	13794
7	27884	27833	27782	27731	27680	27630	7	13765	13735	13705	13676	13646	13617
8	27579	27529	27478	27428	27378	27327	8	13587	13558	13528	13499	13470	13441
9	27277	27227	27177	27127	27077	27028	9	13411	13382	13353	13324	13295	13266
10	0.26978	26929	26879	26830	26781	26731	10	0.13237	13208	13179	13150	13121	13093
11	26682	26633	26584	26535	26486	26438	11	13064	13035	13007	12978	12950	12921
12	26389	26340	26292	26244	26195	26147	12	12893	12864	12835	12807	12779	12751
13	26099	26051	26003	25955	25907	25859	13	12723	12695	12666	12638	12610	12582
14	25811	25763	25716	25668	25621	25573	14	12554	12526	12499	12471	12443	12415
15	25526	25479	25432	25385	25338	25291	15	12387	12360	12332	12305	12277	12249
16	25244	25197	25150	25104	25057	25011	16	12222	12195	12167	12140	12113	12085
17	24964	24918	24872	24825	24779	24733	17	12058	12031	12004	11977	11949	11922
18	24687	24641	24595	24550	24504	24458	18	11895	11868	11842	11815	11788	11761
19	24413	24367	24322	24276	24231	24186	19	11734	11708	11681	11654	11628	11601
20	0.24141	24096	24051	24006	23961	23916	20	0.11575	11548	11522	11495	11469	11443
21	23871	23827	23782	23738	23693	23649	21	11416	11390	11364	11338	11312	11285
22	23605	23560	23516	23472	23428	23384	22	11259	11233	11207	11181	11155	11130
23	23340	23296	23252	23209	23165	23122	23	11104	11078	11052	11027	11001	10975
24	23078	23035	22991	22948	22905	22862	24	10950	10924	10899	10873	10848	10822
25	22819	22775	22732	22689	22647	22604	25	10797	10772	10746	10721	10696	10671
26	22561	22519	22476	22433	22391	22349	26	10646	10620	10595	10570	10545	10520
27	22306	22264	22222	22180	22138	22096	27	10495	10471	10446	10421	10396	10371
28	22054	22012	21970	21928	21887	21845	28	10347	10322	10297	10272	10248	10224
29	21803	21762	21720	21679	21638	21596	29	10199	10175	10151	10126	10102	10078
30	0.21555	21514	21473	21432	21391	21350	30	0.10053	10029	10005	09981	09957	09933
31	21309	21269	21228	21187	21147	21106	31	09909	09885	09861	09837	09813	09789
32	21066	21025	20985	20945	20905	20864	32	09765	09741	09717	09693	09669	09645
33	20824	20784	20744	20704	20665	20625	33	09623	09599	09576	09552	09529	09506
34	20585	20545	20506	20466	20427	20387	34	09482	09459	09435	09412	09389	09366
35	20348	20309	20269	20230	20191	20152	35	09343	09319	09296	09273	09250	09227
36	20113	20074	20035	19996	19957	19919	36	09204	09181	09158	09135	09113	09090
37	19880	19841	19803	19764	19726	19687	37	09067	09044	09022	08999	08976	08954
38	19649	19611	19572	19534	19496	19458	38	08931	08909	08886	08864	08842	08819
39	19420	19382	19344	19306	19269	19231	39	08797	08774	08752	08730	08708	08686
40	0.19193	19156	19118	19081	19043	19006	40	0.08664	08641	08619	08597	08575	08553
41	18968	18931	18894	18857	18820	18783	41	08531	08510	08488	08466	08444	08422
42	18746	18709	18672	18635	18598	18561	42	08401	08379	08357	08336	08314	08293
43	18525	18488	18451	18415	18378	18342	43	08271	08250	08228	08207	08185	08164
44	18306	18269	18233	18197	18161	18124	44	08143	08121	08100	08079	08058	08036
45	18089	18053	18017	17981	17945	17909	45	08015	07994	07973	07952	07931	07910
46	17874	17838	17802	17767	17731	17696	46	07889	07868	07848	07827	07806	07785
47	17660	17625	17590	17554	17519	17484	47	07765	07744	07723	07703	07682	07661
48	17449	17414	17379	17344	17309	17274	48	07641	07620	07600	07579	07559	07539
49	17239	17205	17170	17135	17101	17066	49	07518	07498	07478	07458	07437	07417
50	0.17032	16997	16963	16928	16894	16860	50	0.07397	07377	07357	07337	07317	07297
51	16826	16792	16758	16724	16690	16656	51	07277	07257	07237	07217	07197	07178
52	16622	16588	16554	16520	16487	16453	52	07158	07138	07119	07099	07079	07060
53	16419	16386	16352	16319	16285	16252	53	07040	07021	07001	06982	06962	06943
54	16219	16186	16152	16119	16086	16053	54	06923	06904	06885	06865	06846	06827
55	16020	15987	15954	15920	15888	15856	55	06808	06789	06770	06751	06731	06712
56	15823	15790	15758	15725	15692	15660	56	06693	06674	06656	06637	06618	06599
57	15628	15595	15563	15530	15498	15466	57	06580	06561	06543	06524	06505	06487
58	15434	15402	15370	15338	15306	15274	58	06468	06449	06431	06412	06394	06375
59	15242	15210	15178	15146	15115	15083	59	06357	06338	06320	06302	06283	06265

TABLE XXXV.

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TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. HALF ELAPSED TIME.

M.	4 Hours.						M.	5 Hours.					
	0"	10"	20"	30"	40"	50"		0"	10"	20"	30"	40"	50"
0	0.06247	06229	06211	06192	06174	06156	0	0.01506	01497	01489	01480	01472	0146
1	06138	06120	06102	06084	06066	06048	1	01455	01447	01439	01430	01422	0141
2	06030	06012	05995	05977	05959	05941	2	01406	01398	01390	01381	01373	0136
3	05924	05906	05888	05871	05853	05836	3	01357	01349	01341	01333	01325	0131
4	05818	05801	05783	05766	05748	05731	4	01310	01302	01294	01286	01278	0127
5	05714	05696	05679	05662	05645	05627	5	01263	01255	01247	01240	01232	0122
6	05610	05593	05576	05559	05542	05525	6	01217	01209	01202	01194	01187	0117
7	05508	05491	05474	05457	05440	05423	7	01172	01164	01157	01150	01142	0113
8	05406	05389	05373	05356	05340	05323	8	01128	01120	01113	01106	01099	0109
9	05306	05290	05273	05257	05240	05224	9	01084	01077	01070	01063	01056	0104
10	0.05207	05191	05174	05158	05142	05125	10	0.01042	01035	01028	01021	01014	0100
11	05109	05093	05076	05060	05044	05028	11	01000	09993	09987	09980	09973	0996
12	05012	04996	04980	04964	04948	04932	12	00960	00953	00946	00940	00933	0092
13	04916	04900	04884	04868	04852	04837	13	00920	00913	00907	00900	00894	0088
14	04821	04805	04789	04774	04758	04743	14	00881	00874	00868	00862	00855	0083
15	04727	04711	04696	04680	04665	04649	15	00843	00836	00830	00824	00818	0081
16	04634	04619	04603	04588	04573	04557	16	00805	00799	00793	00787	00781	0077
17	04542	04527	04512	04496	04481	04466	17	00769	00763	00757	00751	00745	0073
18	04451	04436	04421	04406	04391	04376	18	00733	00728	00721	00716	00710	0070
19	04361	04346	04332	04317	04302	04287	19	00699	00693	00687	00682	00676	0067
20	0.04272	04258	04243	04228	04214	04199	20	0.00665	00659	00654	00648	00643	0063
21	04185	04170	04155	04141	04127	04112	21	00632	00626	00621	00616	00610	0060
22	04098	04083	04069	04055	04040	04026	22	00600	00594	00589	00584	00579	0057
23	04012	03998	03983	03969	03955	03941	23	00568	00563	00558	00553	00548	0054
24	03927	03913	03899	03885	03871	03857	24	00538	00533	00528	00523	00518	0051
25	03843	03829	03815	03802	03788	03774	25	00508	00504	00499	00494	00489	0048
26	03760	03746	03733	03719	03706	03692	26	00480	00475	00470	00466	00461	0045
27	03678	03665	03651	03638	03624	03611	27	00452	00447	00443	00438	00434	0042
28	03597	03584	03571	03557	03544	03531	28	00425	00420	00416	00412	00407	0040
29	03517	03504	03491	03478	03465	03452	29	00399	00394	00390	00386	00382	0037
30	0.03438	03425	03412	03399	03386	03373	30	0.00373	00369	00365	00361	00357	0035
31	03360	03348	03335	03322	03309	03296	31	00349	00345	00341	00337	00333	0032
32	03283	03271	03258	03245	03233	03220	32	00325	00321	00317	00313	00310	0030
33	03207	03195	03182	03170	03157	03145	33	00302	00298	00295	00291	00287	0028
34	03132	03120	03107	03095	03083	03070	34	00280	00276	00273	00269	00266	0026
35	03058	03046	03034	03021	03009	02997	35	00259	00255	00252	00249	00245	0024
36	02985	02973	02961	02949	02937	02925	36	00239	00235	00232	00229	00225	0022
37	02913	02901	02889	02877	02865	02853	37	00219	00216	00213	00210	00207	0020
38	02841	02829	02818	02806	02794	02783	38	00200	00197	00194	00191	00188	0018
39	02771	02759	02748	02736	02724	02713	39	00183	00180	00177	00174	00171	0016
40	0.02701	02690	02678	02667	02656	02644	40	0.00166	00163	00160	00157	00155	0015
41	02633	02622	02610	02599	02588	02577	41	00149	00147	00144	00142	00139	0013
42	02565	02554	02543	02532	02521	02510	42	00134	00132	00129	00127	00124	0012
43	02499	02488	02477	02466	02455	02444	43	00120	00117	00115	00113	00110	0010
44	02433	02422	02411	02400	02390	02379	44	00106	00104	00102	00099	00097	0009
45	02368	02357	02347	02336	02326	02315	45	00093	00091	00089	00087	00085	0008
46	02304	02294	02283	02273	02262	02252	46	00081	00079	00077	00075	00074	0007
47	02241	02231	02221	02211	02200	02190	47	00070	00068	00066	00065	00063	0006
48	02179	02169	02159	02149	02139	02128	48	00060	00058	00056	00055	00053	0005
49	02118	02108	02099	02088	02078	02068	49	00050	00049	00047	00046	00044	0004
50	0.02058	02048	02038	02028	02018	02009	50	0.00041	00040	00039	00037	00036	0003
51	01999	01989	01979	01969	01960	01950	51	00033	00032	00031	00030	00029	0002
52	01940	01931	01921	01912	01902	01892	52	00026	00025	00024	00023	00022	0002
53	01883	01873	01864	01854	01845	01836	53	00020	00019	00018	00017	00017	0001
54	01826	01817	01808	01798	01789	01780	54	00015	00014	00013	00013	00012	0001
55	01771	01761	01752	01743	01734	01725	55	00010	00010	00009	00008	00008	0000
56	01716	01707	01698	01689	01680	01671	56	00007	00006	00006	00005	00005	0000
57	01662	01653	01644	01635	01626	01618	57	00004	00003	00003	00003	00002	0000
58	01609	01600	01591	01583	01574	01565	58	00002	00001	00001	00001	00001	0000
59	01557	01548	01540	01531	01523	01514	59	00000	00000	00000	00000	00000	0000

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. MIDDLE TIME.

M.	0 Hour.						M.	1 Hour.					
	0"	10"	20"	30"	40"	50"		0"	10"	20"	30"	40"	50"
0	0.00000	16270	46373	63982	76476	86167	0	4.71403	71521	71638	71755	71872	71988
1	2.94085	00779	06578	11694	16269	20408	1	72104	72220	72335	72450	72565	72679
2	3.24187	27663	30882	33878	36681	39313	2	72793	72907	73020	73133	73246	73358
3	4.1796	44144	46371	48490	50510	52440	3	73470	73582	73694	73805	73916	74027
4	54289	56061	57764	59403	60982	62306	4	74137	74247	74357	74466	74575	74684
5	63978	65402	66781	68117	69413	70672	5	74792	74900	75008	75116	75223	75330
6	71895	73085	74242	75370	76469	77542	6	75437	75544	75650	75756	75862	75967
7	78588	79609	80607	81583	82537	83471	7	76072	76177	76281	76385	76489	76593
8	84385	85280	86157	87017	87860	88686	8	76697	76800	76903	77006	77108	77210
9	89498	90294	91076	91845	92600	93341	9	77312	77413	77514	77615	77716	77817
10	3.94071	94788	95494	96188	96872	97545	10	4.77917	78017	78117	78217	78316	78415
11	98207	98860	99503	00136	00761	01376	11	78514	78613	78711	78809	78907	79004
12	4.01983	02581	03172	03754	04329	04896	12	79101	79198	79295	79392	79488	79584
13	05456	06008	06554	07093	07626	08251	13	79680	79776	79871	79966	80061	80156
14	08671	09184	09691	10193	10688	11178	14	80251	80345	80439	80533	80627	80720
15	11663	12142	12616	13085	13549	14007	15	80813	80906	80999	81091	81183	81275
16	14461	14911	15355	15796	16231	16663	16	81367	81459	81550	81641	81732	81823
17	17090	17513	17932	18346	18757	19164	17	81914	82004	82094	82184	82274	82364
18	19567	19967	20363	20755	21143	21528	18	82453	82542	82631	82720	82808	82896
19	21910	22289	22664	23036	23405	23770	19	82984	83072	83160	83247	83334	83421
20	4.24333	24493	24849	25209	25553	25901	20	4.83508	83595	83682	83768	83854	83940
21	26246	26588	26928	27265	27599	27931	21	84026	84111	84196	84281	84366	84451
22	28260	28587	28911	29233	29553	29870	22	84536	84620	84704	84788	84872	84956
23	30185	30497	30807	31115	31421	31725	23	85039	85123	85205	85288	85371	85454
24	32026	32326	32623	32919	33212	33503	24	85536	85618	85700	85782	85864	85945
25	33793	34080	34365	34649	34931	35211	25	86026	86107	86188	86269	86350	86430
26	35489	35765	36040	36313	36584	36853	26	86510	86590	86670	86750	86830	86910
27	37121	37387	37651	37914	38175	38434	27	86989	87068	87147	87226	87304	87382
28	38692	38949	39204	39457	39709	39960	28	87460	87538	87616	87694	87772	87850
29	40209	40456	40702	40947	41190	41432	29	87927	88004	88081	88158	88235	88311
30	4.41675	41912	42150	42386	42622	42856	30	4.88387	88463	88539	88615	88691	88767
31	43088	43320	43550	43779	44007	44233	31	88842	88917	88992	89067	89142	89217
32	44459	44683	44906	45127	45348	45568	32	89291	89365	89439	89513	89587	89661
33	45786	46003	46219	46434	46648	46861	33	89735	89808	89881	89954	90027	90100
34	47073	47284	47494	47702	47910	48117	34	90173	90246	90318	90390	90462	90534
35	48323	48527	48731	48934	49136	49336	35	90606	90678	90750	90821	90892	90963
36	49536	49735	49933	50130	50326	50522	36	91034	91105	91176	91247	91317	91387
37	50716	50910	51102	51294	51485	51675	37	91457	91527	91597	91667	91737	91807
38	51864	52052	52240	52426	52612	52797	38	91876	91945	92014	92083	92152	92221
39	52981	53165	53347	53529	53710	53891	39	92290	92358	92426	92494	92562	92630
40	4.54070	54249	54427	54604	54780	54956	40	4.92698	92766	92834	92901	92968	93035
41	55131	55306	55479	55652	55824	55996	41	93102	93169	93236	93303	93369	93435
42	56166	56336	56506	56674	56842	57010	42	93501	93567	93633	93699	93765	93831
43	57177	57343	57508	57673	57837	58000	43	93887	93952	94017	94082	94147	94212
44	58163	58325	58487	58648	58808	58968	44	94287	94352	94417	94481	94545	94609
45	59127	59285	59443	59600	59757	59913	45	94673	94737	94801	94865	94929	94993
46	60069	60224	60378	60532	60685	60838	46	95056	95119	95182	95245	95308	95371
47	60990	61141	61292	61443	61593	61742	47	95434	95497	95559	95621	95683	95745
48	61891	62039	62187	62334	62481	62627	48	95807	95869	95931	95993	96055	96117
49	62773	62918	63063	63207	63351	63494	49	96178	96239	96300	96361	96422	96483
50	4.63637	63779	63921	64062	64205	64343	50	4.96544	96603	96665	96725	96785	96845
51	64483	64622	64761	64899	65037	65175	51	96906	96966	97026	97086	97145	97204
52	65312	65448	65584	65720	65855	65990	52	97264	97323	97383	97442	97501	97560
53	66125	66259	66392	66525	66658	66790	53	97618	97677	97736	97794	97853	97911
54	66922	67053	67184	67314	67444	67574	54	97969	98027	98085	98143	98201	98259
55	67703	67832	67961	68089	68217	68344	55	98316	98374	98431	98489	98546	98603
56	68871	68997	69123	69249	69374	69500	56	98660	98717	98774	98831	98887	98944
57	69224	69348	69472	69595	69718	69841	57	99000	99057	99113	99169	99225	99281
58	69963	70085	70207	70328	70449	70569	58	99337	99393	99448	99504	99559	99615
59	70689	70809	70928	71047	71166	71285	59	99670	99725	99780	99835	99890	99945

TABLE XXXVI.

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TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. MIDDLE TIME.

2 Hours.							3 Hours.						
M	0'	10'	20'	30'	40'	50'	M	0'	10'	20'	30'	40'	50'
0	5.00000	00055	00109	00164	00218	00272	0	5.15052	15089	15115	15146	15177	15202
1	00337	00381	00435	00489	00543	00596	1	15240	15271	15303	15334	15365	15395
2	00650	00704	00757	00810	00864	00917	2	15427	15458	15489	15520	15551	15581
3	00970	01023	01076	01129	01182	01234	3	15613	15644	15674	15705	15735	15765
4	01287	01339	01392	01444	01496	01549	4	15790	15821	15851	15881	15911	15941
5	01601	01653	01705	01757	01808	01860	5	15979	16009	16039	16069	16099	16129
6	01912	01963	02014	02066	02117	02168	6	16159	16189	16219	16249	16279	16309
7	02219	02270	02321	02372	02423	02473	7	16338	16368	16398	16427	16457	16487
8	02524	02574	02625	02675	02725	02776	8	16516	16545	16575	16604	16633	16663
9	02826	02876	02926	02976	03026	03075	9	16692	16721	16750	16779	16808	16838
10	5.03125	03174	03224	03273	03322	03372	10	5.16866	16895	16924	16953	16982	17011
11	03421	03470	03519	03568	03617	03665	11	17039	17068	17096	17125	17153	17182
12	03714	03763	03811	03859	03908	03956	12	17210	17239	17267	17296	17324	17353
13	04004	04052	04100	04148	04196	04244	13	17380	17408	17437	17465	17493	17522
14	04292	04340	04387	04435	04482	04530	14	17549	17577	17604	17632	17660	17688
15	04577	04624	04671	04718	04765	04812	15	17716	17743	17771	17798	17826	17854
16	04859	04906	04953	04999	05046	05092	16	17881	17908	17936	17963	17990	18018
17	05139	05185	05231	05278	05324	05370	17	18045	18072	18099	18126	18154	18181
18	05416	05462	05508	05553	05599	05645	18	18208	18235	18261	18288	18315	18342
19	05690	05736	05781	05827	05872	05917	19	18369	18395	18422	18449	18475	18502
20	5.05962	06007	06052	06097	06142	06187	20	5.18528	18555	18581	18608	18634	18660
21	06232	06275	06321	06365	06410	06454	21	18687	18713	18739	18765	18791	18817
22	06498	06543	06587	06631	06675	06719	22	18844	18870	18896	18922	18948	18973
23	06763	06807	06851	06894	06938	06981	23	18999	19025	19051	19076	19102	19127
24	07025	07068	07112	07155	07198	07241	24	19153	19179	19204	19230	19255	19281
25	07284	07328	07371	07413	07456	07499	25	19306	19331	19357	19382	19407	19432
26	07542	07584	07627	07670	07712	07754	26	19457	19483	19508	19533	19558	19583
27	07797	07839	07881	07923	07965	08007	27	19608	19632	19657	19682	19707	19732
28	08049	08091	08133	08175	08216	08258	28	19756	19781	19806	19831	19855	19880
29	08300	08341	08383	08424	08465	08507	29	19904	19928	19952	19977	20001	20025
30	5.08548	08589	08630	08671	08712	08753	30	5.20050	20074	20098	20122	20146	20170
31	08794	08834	08875	08916	08956	08997	31	20194	20218	20242	20266	20290	20314
32	09037	09078	09118	09158	09198	09239	32	20338	20362	20385	20409	20433	20456
33	09279	09319	09359	09399	09438	09478	33	20480	20504	20527	20551	20574	20597
34	09518	09558	09597	09637	09676	09716	34	20621	20644	20668	20691	20714	20737
35	09755	09794	09834	09873	09912	09951	35	20760	20783	20807	20830	20853	20876
36	09990	10029	10068	10107	10146	10184	36	20899	20922	20945	20967	20990	21013
37	10223	10262	10300	10339	10377	10416	37	21036	21059	21081	21104	21127	21149
38	10454	10492	10531	10569	10607	10645	38	21172	21194	21217	21239	21261	21284
39	10683	10721	10759	10797	10834	10872	39	21306	21329	21351	21373	21395	21417
40	5.10910	10947	10985	11022	11060	11097	40	5.21439	21462	21484	21506	21528	21550
41	11135	11172	11209	11246	11283	11320	41	21572	21593	21615	21637	21659	21681
42	11357	11394	11431	11468	11505	11542	42	21702	21724	21746	21767	21789	21810
43	11578	11615	11652	11688	11725	11761	43	21832	21853	21875	21896	21918	21939
44	11797	11834	11870	11906	11942	11979	44	21960	21982	22003	22024	22045	22067
45	12014	12050	12086	12122	12158	12194	45	22088	22109	22130	22151	22172	22193
46	12229	12265	12301	12336	12372	12407	46	22214	22235	22255	22276	22297	22318
47	12443	12478	12513	12549	12583	12619	47	22338	22359	22380	22400	22421	22442
48	12654	12689	12724	12759	12794	12829	48	22462	22483	22503	22524	22544	22564
49	12864	12898	12933	12968	13002	13037	49	22585	22605	22625	22645	22665	22686
50	5.13071	13106	13140	13175	13209	13243	50	5.22706	22725	22746	22766	22786	22806
51	13277	13311	13345	13379	13413	13447	51	22826	22846	22866	22886	22906	22925
52	13481	13515	13549	13583	13616	13650	52	22945	22965	22984	23004	23024	23043
53	13684	13717	13751	13784	13818	13851	53	23063	23082	23102	23121	23141	23160
54	13884	13917	13951	13984	14017	14050	54	23180	23199	23218	23238	23257	23276
55	14083	14116	14149	14182	14215	14247	55	23295	23314	23333	23352	23371	23391
56	14280	14313	14345	14378	14411	14443	56	23410	23429	23447	23466	23485	23504
57	14475	14508	14540	14573	14605	14637	57	23523	23542	23560	23579	23598	23616
58	14669	14701	14733	14765	14797	14829	58	23635	23654	23672	23691	23709	23728
59	5.14861	14893	14925	14957	14988	15020	59	5.23746	23765	23783	23801	23820	23838

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. MIDDLE TIME.

M.	4 Hours.						M.	5 Hours.					
	0'	10'	20'	30'	40'	50'		0'	10'	20'	30'	40'	50'
0	5.23836	23874	23892	23911	23929	23947	0	5.28597	28606	28614	28623	28631	28639
1	23965	23983	24001	24019	24037	24055	1	28648	28656	28664	28673	28681	28689
2	24073	24091	24108	24126	24144	24162	2	28697	28705	28713	28722	28730	28738
3	24179	24197	24215	24232	24250	24267	3	28746	28754	28762	28770	28778	28786
4	24285	24302	24320	24337	24355	24372	4	28793	28801	28809	28817	28825	28833
5	24389	24407	24424	24441	24458	24476	5	28840	28848	28856	28863	28871	28879
6	24493	24510	24527	24544	24561	24578	6	28886	28894	28901	28909	28916	28924
7	24595	24612	24629	24646	24663	24680	7	28931	28939	28946	28953	28961	28968
8	24697	24714	24730	24747	24763	24780	8	28975	28983	28990	28997	29004	29012
9	24797	24813	24830	24847	24863	24879	9	29019	29026	29033	29040	29047	29054
10	24896	24912	24929	24945	24961	24978	10	5.29061	29068	29075	29082	29089	29096
11	24994	25010	25027	25043	25059	25075	11	29103	29110	29116	29123	29130	29137
12	25091	25107	25123	25139	25155	25171	12	29143	29150	29157	29163	29170	29177
13	25187	25203	25219	25235	25251	25266	13	29183	29190	29196	29203	29209	29216
14	25282	25298	25314	25329	25345	25360	14	29222	29229	29235	29241	29248	29254
15	25376	25392	25407	25423	25438	25454	15	29260	29267	29273	29279	29285	29292
16	25469	25484	25500	25515	25530	25546	16	29298	29304	29310	29316	29322	29328
17	25561	25576	25591	25607	25622	25637	17	29334	29340	29346	29352	29358	29364
18	25652	25667	25682	25697	25712	25727	18	29370	29375	29381	29387	29393	29399
19	25742	25757	25771	25786	25801	25816	19	29404	29410	29416	29421	29427	29433
20	5.25831	25845	25860	25875	25889	25904	20	5.29438	29444	29449	29455	29460	29466
21	25918	25933	25948	25962	25976	25991	21	29471	29477	29482	29487	29493	29498
22	26005	26020	26034	26048	26063	26077	22	29503	29509	29514	29519	29524	29529
23	26091	26105	26120	26134	26148	26162	23	29535	29540	29545	29550	29555	29560
24	26176	26190	26204	26218	26232	26246	24	29567	29570	29575	29580	29585	29590
25	26260	26274	26288	26301	26315	26329	25	29595	29599	29604	29609	29614	29619
26	26343	26357	26370	26384	26397	26411	26	29623	29628	29633	29637	29642	29647
27	26425	26438	26452	26465	26479	26492	27	29651	29656	29660	29665	29669	29674
28	26506	26519	26532	26546	26559	26572	28	29678	29683	29687	29691	29696	29700
29	26586	26599	26612	26625	26638	26651	29	29704	29709	29713	29717	29721	29726
30	5.26665	26678	26691	26704	26717	26730	30	5.29730	29734	29738	29742	29746	29750
31	26743	26755	26768	26781	26794	26807	31	29754	29758	29762	29766	29770	29774
32	26820	26832	26845	26858	26870	26883	32	29778	29782	29786	29790	29793	29797
33	26896	26908	26921	26933	26946	26958	33	29801	29805	29808	29812	29816	29819
34	26971	26983	26995	27008	27020	27033	34	29823	29827	29830	29834	29837	29841
35	27045	27057	27069	27082	27094	27106	35	29844	29848	29851	29854	29858	29861
36	27118	27130	27142	27154	27166	27178	36	29864	29868	29871	29874	29878	29881
37	27190	27202	27214	27226	27238	27250	37	29884	29887	29890	29893	29896	29900
38	27262	27274	27285	27297	27309	27320	38	29903	29906	29909	29912	29915	29918
39	27332	27344	27355	27367	27379	27390	39	29920	29923	29926	29929	29932	29935
40	5.27402	27413	27425	27436	27447	27459	40	5.29937	29940	29943	29946	29948	29951
41	27470	27481	27493	27504	27515	27526	41	29954	29956	29959	29961	29964	29966
42	27538	27549	27561	27571	27582	27593	42	29969	29971	29974	29976	29979	29981
43	27604	27615	27626	27637	27648	27659	43	29982	29986	29988	29990	29993	29995
44	27670	27681	27692	27703	27713	27724	44	29997	29999	30001	30004	30006	30008
45	27735	27746	27756	27767	27777	27788	45	30010	30012	30014	30016	30018	30020
46	27799	27809	27820	27830	27841	27851	46	30022	30024	30026	30028	30029	30031
47	27862	27872	27882	27893	27903	27913	47	30033	30035	30037	30038	30040	30042
48	27924	27934	27944	27954	27964	27975	48	30043	30045	30047	30048	30050	30051
49	27985	27995	28005	28015	28025	28035	49	30053	30054	30056	30057	30059	30060
50	5.28045	28055	28065	28075	28085	28094	50	5.30062	30063	30064	30066	30067	30068
51	28104	28114	28124	28134	28143	28153	51	30070	30071	30072	30073	30074	30075
52	28163	28172	28182	28191	28201	28211	52	30077	30078	30079	30080	30081	30082
53	28220	28230	28239	28249	28258	28267	53	30083	30084	30085	30086	30086	30087
54	28277	28286	28295	28305	28314	28323	54	30088	30089	30090	30090	30091	30092
55	28332	28342	28351	28360	28369	28378	55	30093	30093	30094	30095	30095	30096
56	28387	28396	28405	28414	28423	28432	56	30096	30097	30097	30098	30098	30099
57	28441	28450	28459	28468	28477	28485	57	30099	30100	30100	30100	30101	30101
58	28494	28503	28512	28520	28529	28538	58	30101	30102	30102	30102	30102	30102
59	5.28546	28555	28563	28572	28580	28589	59	5.30103	30103	30103	30103	30103	30103

TABLE XXXVII. 173
TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

		O Hour.						Argument.		1 Hour.					
M.	°'	10'	20'	30'	40'	50'				0'	10'	20'	30'	40'	50'
0		42230	02436	37654	62642	89024	0	3.58243	53482	53721	53959	54197	54434		
1	9.97863	11250	22848	33079	42230	50509	1	54670	54905	55140	55375	55608	55841		
2	3.58066	65019	71455	77448	83054	88319	2	56074	56306	56537	56767	56997	57226		
3	93284	97984	02435	06673	10714	14575	3	57455	57683	57910	58137	58363	58589		
4	1.18271	21817	25224	28502	31660	34708	4	58814	59038	59262	59486	59708	59930		
5	37653	40501	43258	45931	48524	51041	5	60152	60373	60593	60813	61032	61251		
6	53488	55868	58184	60440	62639	64784	6	61469	61686	61903	62120	62336	62551		
7	66877	68920	70917	72869	74778	76646	7	62766	62980	63194	63407	63620	63832		
8	78474	80265	82019	83739	85426	87080	8	64043	64254	64465	64675	64885	65094		
9	88703	90297	91862	93399	94909	96394	9	65302	65510	65717	65924	66131	66337		
10	1.97854	99289	00701	02091	03458	04805	10	3.66542	66747	66952	67156	67359	67562		
11	2.06131	07437	08723	09991	11240	12472	11	67765	67967	68168	68369	68570	68770		
12	19687	14885	16066	17232	18382	19517	12	68969	69168	69367	69565	69763	69961		
13	20638	21744	22836	23915	24980	26033	13	70157	70354	70550	70745	70940	71135		
14	27073	28100	29116	30120	31112	32093	14	71329	71523	71716	71909	72101	72295		
15	33063	34023	34972	35910	36839	37758	15	72485	72676	72867	73057	73247	73436		
16	38667	39567	40457	41338	42211	43075	16	73625	73813	74001	74189	74376	74562		
17	43930	44777	45616	46447	47270	48085	17	74750	74936	75121	75307	75491	75676		
18	48893	49693	50486	51271	52050	52821	18	75860	76043	76227	76409	76592	76774		
19	53586	54344	55096	55841	56580	57312	19	76955	77137	77318	77498	77678	77858		
20	2.58039	58759	59473	60182	60885	61582	20	3.78037	78216	78395	78573	78750	78928		
21	62274	62960	63641	64316	64987	65652	21	79105	79282	79458	79634	79809	79982		
22	66312	66967	67617	68262	68903	69538	22	80159	80334	80508	80682	80855	81028		
23	70169	70796	71418	72036	72649	73258	23	81201	81373	81545	81717	81888	82059		
24	73863	74464	75060	75652	76241	76825	24	82230	82400	82570	82739	82908	83077		
25	77405	77982	78555	79124	79689	80251	25	83246	83414	83582	83749	83917	84084		
26	80809	81363	81914	82461	83005	83546	26	84250	84416	84582	84748	84913	85078		
27	84083	84617	85148	85675	86199	86720	27	85242	85406	85570	85734	85897	86060		
28	87238	87753	88265	88773	89279	89782	28	86223	86385	86547	86709	86870	87031		
29	90282	90779	91273	91765	92254	92740	29	87192	87352	87513	87672	87832	87991		
30	2.93223	93703	94181	94656	95129	95599	30	3.88150	88309	88467	88625	88783	88940		
31	96067	96532	96994	97454	97912	98367	31	89097	89254	89411	89567	89723	89879		
32	98820	99270	99718	100164	100608	101049	32	90084	90189	90344	90498	90653	90807		
33	3.01488	01925	02360	02792	03223	03650	33	90960	91114	91267	91420	91572	91725		
34	04077	04501	04922	05342	05760	06176	34	91876	92028	92179	92331	92482	92633		
35	06590	07001	07411	07819	08225	08630	35	92782	92932	93082	93232	93381	93530		
36	09032	09432	09830	10227	10622	11015	36	93679	93827	93975	94123	94271	94418		
37	11406	11796	12184	12570	12954	13337	37	94566	94712	94859	95005	95151	95297		
38	13718	14097	14475	14850	15225	15597	38	95443	95588	95733	95878	96023	96167		
39	15969	16338	16706	17072	17437	17800	39	96311	96455	96599	96742	96885	97028		
40	3.18162	18522	18881	19238	19594	19948	40	3.97170	97313	97455	97597	97738	97880		
41	20301	20653	21003	21351	21698	22044	41	98021	98162	98302	98442	98583	98725		
42	22389	22732	23073	23414	23753	24090	42	98862	99002	99141	99280	99419	99557		
43	24427	24762	25095	25428	25759	26089	43	99696	99834	99972	100109	100247	100384		
44	26418	26745	27072	27396	27720	28042	44	4.00521	00657	00793	00930	01066	01202		
45	28363	28683	29002	29320	29637	29953	45	01337	01473	01608	01743	01877	02015		
46	30266	30579	30891	31202	31512	31820	46	02146	02280	02414	02547	02681	02815		
47	32128	32434	32739	33044	33347	33649	47	02947	03080	03212	03344	03477	03608		
48	33950	34250	34549	34847	35144	35439	48	03740	03871	04003	04134	04265	04395		
49	35734	36028	36321	36613	36903	37193	49	04526	04656	04786	04916	05045	05175		
50	3.37482	37770	38057	38343	38628	38912	50	4.05304	05433	05561	05690	05818	05946		
51	39195	39477	39759	40039	40318	40597	51	06074	06202	06330	06457	06584	06711		
52	40875	41151	41427	41702	41976	42250	52	06838	06965	07091	07217	07343	07469		
53	42523	42794	43064	43334	43603	43871	53	07595	07720	07845	07970	08095	08220		
54	44138	44404	44670	44935	45199	45462	54	08344	08468	08592	08716	08840	08964		
55	45724	45986	46247	46507	46765	47024	55	09087	09210	09333	09456	09578	09701		
56	47282	47539	47795	48050	48305	48558	56	09823	09945	10067	10188	10310	10431		
57	48811	49064	49315	49566	49816	50066	57	10552	10673	10794	10915	11035	11155		
58	50314	50562	50809	51056	51301	51547	58	11275	11395	11515	11634	11754	11875		
59	3.51791	52035	52278	52520	52761	53002	59	4.11992	12111	12229	12348	12466	12585		

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. RISING.													
2 Hours.							3 Hours.						
M.	0'	10'	20'	30'	40'	50'	M.	0'	10'	20'	30'	40'	50'
0	4.12702	12820	12938	13055	13172	13289	0	4.46671	46747	46823	46899	46975	47051
1	13406	13523	13640	13756	13872	13988	1	47127	47203	47278	47354	47430	47505
2	14104	14220	14336	14451	14566	14682	2	47580	47656	47731	47806	47881	47956
3	14797	14911	15026	15140	15255	15369	3	48031	48106	48180	48255	48330	48404
4	15483	15597	15710	15824	15937	16050	4	48479	48553	48627	48701	48776	48850
5	16163	16276	16389	16501	16614	16726	5	48924	48998	49071	49145	49219	49293
6	16838	16950	17062	17173	17285	17396	6	49366	49440	49513	49586	49659	49733
7	17507	17618	17729	17839	17950	18060	7	49806	49879	49952	50025	50098	50171
8	18171	18281	18391	18500	18610	18719	8	50243	50316	50388	50461	50533	50605
9	18828	18938	19047	19156	19265	19373	9	50677	50750	50822	50894	50966	51038
10	4.19482	19590	19698	19806	19914	20021	10	4.51109	51181	51253	51325	51396	51467
11	20129	20236	20344	20451	20558	20665	11	51529	51610	51681	51753	51824	51895
12	20771	20878	20984	21091	21197	21303	12	51966	52037	52107	52178	52249	52319
13	21409	21514	21620	21725	21831	21936	13	52390	52461	52531	52601	52672	52742
14	22011	22116	22220	22325	22429	22534	14	52812	52882	52952	53022	53092	53162
15	22668	22772	22876	22980	23083	23187	15	53231	53301	53371	53440	53510	53579
16	23290	23393	23496	23599	23702	23805	16	53648	53718	53787	53856	53925	53994
17	23907	24010	24112	24214	24316	24418	17	54063	54132	54201	54269	54338	54407
18	24520	24622	24723	24825	24926	25027	18	54475	54544	54612	54680	54748	54817
19	25128	25229	25330	25430	25531	25631	19	54885	54953	55021	55089	55157	55225
20	4.25731	25831	25931	26031	26131	26231	20	4.55293	55360	55428	55496	55563	55630
21	26330	26429	26529	26628	26727	26826	21	55698	55765	55832	55900	55967	56034
22	26924	27023	27121	27220	27318	27416	22	56101	56168	56235	56301	56368	56435
23	27514	27612	27710	27807	27905	28002	23	56501	56568	56634	56701	56767	56834
24	28099	28197	28294	28391	28487	28584	24	56900	56966	57032	57098	57164	57230
25	28680	28777	28873	28969	29065	29161	25	57296	57362	57428	57494	57559	57625
26	29257	29353	29449	29544	29639	29735	26	57690	57756	57821	57886	57951	58017
27	29830	29925	30020	30115	30209	30304	27	58082	58147	58212	58277	58342	58407
28	30398	30493	30587	30681	30775	30869	28	58471	58536	58601	58665	58730	58794
29	30963	31056	31150	31243	31337	31430	29	58859	58923	58988	59052	59116	59180
30	4.31523	31616	31709	31801	31894	31987	30	4.59244	59308	59372	59436	59500	59564
31	32079	32171	32264	32356	32448	32540	31	59627	59691	59755	59818	59882	59945
32	32631	32723	32815	32906	32997	33089	32	60008	60072	60135	60198	60261	60324
33	33180	33271	33362	33453	33543	33634	33	60387	60450	60513	60576	60639	60701
34	33724	33815	33905	33995	34085	34175	34	60764	60827	60890	60952	61015	61077
35	34265	34355	34444	34534	34623	34713	35	61139	61202	61264	61326	61388	61450
36	34802	34891	34980	35069	35158	35247	36	61512	61574	61636	61698	61760	61822
37	35385	35474	35562	35650	35738	35827	37	61883	61945	62006	62068	62129	62191
38	35865	35953	36041	36128	36216	36303	38	62252	62313	62375	62436	62497	62558
39	36391	36478	36565	36653	36740	36827	39	62619	62680	62741	62802	62863	62923
40	4.36913	37000	37087	37173	37260	37346	40	4.62984	63045	63105	63166	63226	63287
41	37432	37518	37604	37690	37776	37862	41	63347	63407	63468	63528	63588	63648
42	37948	38033	38119	38204	38289	38374	42	63708	63768	63828	63888	63948	64008
43	38459	38544	38629	38714	38799	38884	43	64068	64127	64187	64246	64306	64365
44	38968	39052	39137	39221	39305	39389	44	64425	64484	64544	64603	64662	64721
45	39473	39557	39641	39725	39808	39892	45	64780	64839	64898	64957	65016	65075
46	39975	40058	40142	40225	40308	40391	46	65134	65193	65251	65310	65369	65427
47	40474	40556	40639	40722	40804	40886	47	65486	65544	65602	65661	65719	65777
48	40969	41051	41133	41215	41297	41379	48	65836	65894	65952	66010	66068	66126
49	41461	41542	41624	41706	41787	41868	49	66184	66241	66299	66357	66415	66472
50	4.41950	42031	42112	42193	42274	42355	50	4.66530	66588	66645	66702	66760	66817
51	42435	42516	42597	42677	42758	42838	51	66874	66932	66989	67046	67103	67160
52	42918	42998	43078	43158	43238	43318	52	67217	67274	67331	67388	67445	67502
53	43396	43477	43557	43636	43716	43795	53	67558	67615	67671	67728	67785	67841
54	43874	43953	44032	44111	44190	44269	54	67897	67954	68010	68066	68123	68179
55	44348	44426	44505	44583	44662	44740	55	68235	68291	68347	68403	68459	68515
56	44818	44896	44974	45052	45130	45208	56	68571	68627	68682	68738	68794	68849
57	45286	45363	45441	45518	45596	45673	57	68905	68960	69016	69071	69127	69182
58	45750	45827	45904	45981	46058	46135	58	69237	69292	69348	69403	69458	69513
59	4.46212	46289	46365	46441	46518	46595	59	4.69568	69623	69678	69733	69787	69842

TABLE XXXVII.

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TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. RISING.

4 Hours.							5 Hours.						
M.	0'	10'	20'	30'	40'	50'	M.	0'	10'	20'	30'	40'	50'
0	4.69897	69952	70006	70061	70115	70170	0	4.86992	87034	87075	87116	87157	87198
1	70224	70279	70333	70387	70442	70496	1	87239	87280	87321	87362	87402	87443
2	70550	70604	70658	70712	70766	70820	2	87484	87525	87566	87606	87647	87688
3	70874	70928	70982	71036	71089	71143	3	87728	87769	87809	87850	87890	87931
4	71197	71250	71304	71357	71411	71464	4	87971	88012	88052	88093	88133	88175
5	71518	71571	71624	71678	71730	71784	5	88213	88254	88294	88334	88374	88414
6	71837	71890	71943	71996	72049	72102	6	88454	88494	88534	88574	88614	88654
7	72155	72208	72260	72313	72366	72418	7	88694	88734	88774	88814	88853	88893
8	72471	72523	72576	72628	72681	72733	8	88933	88973	89012	89052	89091	89131
9	72785	72838	72890	72942	72994	73046	9	89171	89210	89250	89289	89328	89368
10	4.73098	73150	73202	73254	73306	73358	10	89407	89447	89486	89525	89564	89604
11	73410	73462	73514	73565	73617	73668	11	89643	89682	89721	89760	89799	89838
12	73720	73772	73823	73874	73926	73977	12	89877	89916	89955	89994	90033	90072
13	74028	74080	74131	74182	74233	74284	13	90111	90149	90188	90227	90266	90305
14	74335	74386	74437	74488	74539	74590	14	90343	90382	90421	90459	90498	90536
15	74641	74692	74742	74793	74844	74894	15	90575	90613	90652	90690	90728	90767
16	74945	74995	75046	75096	75147	75197	16	90805	90843	90882	90920	90958	90996
17	75247	75298	75348	75398	75448	75498	17	91034	91073	91111	91149	91187	91225
18	75548	75599	75649	75699	75748	75798	18	91265	91303	91341	91379	91417	91455
19	75848	75898	75948	75997	76047	76097	19	91490	91528	91566	91604	91641	91679
20	4.76146	76196	76245	76295	76344	76394	20	4.91716	91754	91792	91830	91867	91904
21	76443	76492	76542	76591	76640	76689	21	91912	91950	92017	92054	92092	92129
22	76738	76787	76836	76885	76934	76983	22	92166	92203	92241	92278	92315	92352
23	77032	77081	77130	77179	77227	77276	23	92390	92427	92464	92501	92538	92575
24	77325	77373	77422	77470	77519	77567	24	92612	92649	92686	92723	92760	92796
25	77616	77664	77713	77761	77809	77857	25	92833	92870	92907	92944	92980	93017
26	77906	77954	78002	78050	78098	78146	26	93054	93091	93127	93164	93200	93237
27	78194	78242	78290	78338	78385	78433	27	93273	93310	93346	93383	93419	93455
28	78481	78529	78576	78624	78671	78719	28	93492	93528	93564	93600	93637	93673
29	78767	78814	78861	78908	78956	79003	29	93709	93745	93781	93817	93854	93890
30	4.79051	79098	79145	79192	79240	79287	30	4.93926	93962	93998	94034	94069	94105
31	79334	79381	79428	79475	79522	79568	31	94141	94177	94213	94249	94284	94320
32	79615	79662	79709	79756	79802	79849	32	94356	94392	94427	94463	94498	94534
33	79896	79942	79989	80035	80082	80128	33	94570	94605	94641	94676	94712	94747
34	80175	80221	80267	80314	80360	80406	34	94782	94818	94853	94888	94924	94959
35	80452	80498	80544	80591	80637	80683	35	94994	95029	95065	95100	95135	95170
36	80729	80775	80820	80866	80912	80958	36	95205	95240	95275	95310	95345	95380
37	81004	81049	81095	81141	81186	81232	37	95415	95450	95485	95520	95555	95590
38	81277	81323	81368	81414	81459	81505	38	95624	95659	95694	95728	95763	95798
39	81550	81595	81641	81686	81731	81776	39	95832	95867	95902	95936	95971	96005
40	4.81821	81866	81911	81956	82001	82046	40	4.96040	96074	96109	96143	96177	96212
41	82091	82136	82181	82226	82271	82315	41	96246	96280	96315	96349	96383	96417
42	82360	82405	82449	82494	82538	82583	42	96451	96486	96520	96554	96588	96622
43	82628	82672	82716	82761	82805	82850	43	96656	96690	96724	96758	96792	96826
44	82894	82938	82982	83026	83071	83115	44	96860	96894	96927	96961	96995	97029
45	83159	83203	83247	83291	83335	83379	45	97069	97096	97130	97163	97197	97231
46	83423	83467	83510	83554	83598	83642	46	97264	97298	97331	97365	97398	97432
47	83685	83729	83773	83816	83860	83903	47	97465	97499	97532	97565	97599	97632
48	83947	83990	84034	84077	84120	84164	48	97665	97699	97732	97765	97798	97832
49	84207	84250	84293	84337	84380	84423	49	97865	97898	97931	97964	97997	98030
50	4.84466	84509	84552	84595	84638	84681	50	4.98063	98096	98129	98162	98195	98228
51	84724	84767	84810	84852	84895	84938	51	98261	98293	98326	98359	98392	98425
52	84981	85023	85066	85108	85151	85194	52	98437	98469	98502	98535	98568	98601
53	85236	85278	85321	85363	85406	85448	53	98653	98686	98718	98751	98783	98816
54	85490	85533	85575	85617	85659	85701	54	98848	98880	98913	98945	98978	99010
55	85744	85786	85828	85870	85912	85954	55	99042	99074	99107	99139	99171	99203
56	85996	86037	86079	86121	86163	86205	56	99235	99267	99300	99332	99364	99396
57	86246	86288	86330	86372	86413	86455	57	99428	99460	99492	99524	99556	99587
58	86496	86538	86579	86621	86662	86704	58	99619	99651	99683	99715	99747	99778
59	4.86745	86786	86828	86869	86910	86951	59	4.99810	99842	99873	99905	99937	99968

TO FIND THE LATITUDE BY DOUBLE ALTITUDES, AND THE ELAPSED TIME.

Argument. RISING.

M.	6 Hours.						M.	7 Hours.					
	0'	10'	20'	30'	40'	50'		0'	10'	20'	30'	40'	50'
0	5.00000	00031	00069	00094	00125	00156	0	5.09996	10020	10044	10068	10092	10116
1	00188	00219	00250	00282	00313	00345	1	10140	10164	10188	10212	10236	10260
2	00876	00407	00438	00469	00501	00532	2	10284	10308	10332	10356	10380	10404
3	00563	00595	00626	00657	00689	00720	3	10429	10453	10477	10501	10525	10549
4	00751	00782	00813	00844	00875	00905	4	10573	10596	10620	10643	10667	10691
5	00936	00967	00998	01028	01059	01090	5	10714	10738	10761	10785	10809	10832
6	01121	01151	01182	01213	01244	01275	6	10856	10879	10903	10926	10950	10974
7	01305	01336	01367	01398	01428	01459	7	10997	11021	11044	11068	11092	11115
8	01490	01520	01550	01580	01611	01641	8	11139	11162	11183	11208	11231	11255
9	01671	01701	01731	01762	01792	01822	9	11278	11301	11324	11347	11370	11393
10	5.01853	01883	01913	01943	01973	02004	10	5.11417	11440	11463	11486	11509	11532
11	02034	02064	02094	02125	02155	02185	11	11556	11579	11602	11625	11648	11671
12	02215	02245	02275	02304	02334	02364	12	11694	11717	11740	11763	11785	11808
13	02394	02423	02453	02483	02512	02542	13	11831	11854	11876	11899	11922	11945
14	02572	02602	02631	02661	02691	02720	14	11967	11990	12013	12036	12058	12080
15	02750	02780	02810	02839	02869	02899	15	12104	12126	12149	12172	12195	12217
16	02928	02958	02987	03016	03045	03074	16	12240	12263	12285	12307	12329	12352
17	03104	03133	03162	03191	03220	03250	17	12374	12396	12419	12441	12463	12486
18	03279	03308	03337	03366	03396	03425	18	12508	12530	12553	12575	12597	12619
19	03454	03483	03512	03542	03571	03600	19	12642	12664	12686	12709	12731	12753
20	5.03629	03658	03687	03715	03744	03773	20	5.12776	12798	12820	12841	12863	12885
21	03801	03830	03859	03887	03916	03945	21	12907	12929	12951	12973	12995	13017
22	03974	04002	04031	04060	04088	04117	22	13039	13061	13083	13104	13126	13148
23	04146	04174	04203	04232	04261	04289	23	13170	13192	13214	13236	13258	13280
24	04318	04346	04374	04402	04430	04459	24	13302	13323	13345	13366	13388	13409
25	04487	04515	04543	04571	04600	04628	25	13431	13452	13474	13495	13517	13538
26	04656	04684	04712	04740	04769	04797	26	13560	13581	13603	13624	13646	13667
27	04825	04853	04881	04910	04938	04966	27	13689	13711	13732	13753	13775	13796
28	04994	05022	05050	05077	05105	05133	28	13818	13839	13860	13881	13902	13923
29	05160	05188	05216	05243	05271	05299	29	13944	13966	13987	14008	14029	14050
30	5.05327	05354	05382	05410	05437	05465	30	5.14071	14092	14113	14134	14155	14176
31	05493	05520	05548	05576	05604	05631	31	14198	14219	14240	14261	14282	14303
32	05659	05686	05713	05740	05768	05795	32	14324	14345	14366	14386	14407	14428
33	05822	05849	05876	05904	05931	05958	33	14449	14469	14490	14511	14531	14552
34	05985	06013	06040	06067	06094	06122	34	14573	14593	14614	14635	14656	14676
35	06149	06176	06203	06230	06258	06285	35	14697	14718	14738	14759	14780	14800
36	06312	06339	06365	06392	06419	06445	36	14821	14842	14862	14882	14902	14923
37	06472	06499	06526	06553	06579	06606	37	14943	14963	14984	15004	15024	15045
38	06633	06660	06686	06713	06740	06766	38	15065	15085	15106	15126	15146	15166
39	06793	06820	06847	06875	06900	06927	39	15187	15207	15227	15248	15268	15288
40	5.06954	06980	07006	07033	07059	07085	40	5.15309	15329	15349	15369	15388	15408
41	07111	07138	07164	07190	07217	07243	41	15428	15448	15468	15488	15508	15528
42	07269	07295	07322	07348	07374	07400	42	15548	15568	15588	15608	15628	15648
43	07427	07453	07479	07505	07532	07558	43	15667	15687	15707	15727	15747	15767
44	07584	07610	07636	07662	07687	07713	44	15787	15807	15826	15846	15865	15885
45	07739	07765	07791	07816	07842	07868	45	15904	15924	15943	15963	15983	16003
46	07894	07920	07945	07971	07997	08023	46	16022	16041	16061	16080	16100	16119
47	08049	08074	08100	08126	08152	08178	47	16139	16158	16178	16197	16217	16237
48	08203	08229	08254	08280	08305	08330	48	16256	16275	16295	16314	16333	16353
49	08356	08381	08406	08432	08457	08482	49	16371	16390	16410	16429	16448	16467
50	5.08508	08533	08558	08584	08609	08634	50	5.16486	16505	16525	16544	16563	16583
51	08660	08685	08710	08736	08761	08787	51	16601	16620	16640	16659	16678	16697
52	08812	08837	08862	08887	08911	08936	52	16716	16735	16754	16773	16791	16810
53	08961	08986	09011	09036	09061	09086	53	16829	16848	16866	16885	16904	16923
54	09111	09136	09160	09185	09210	09235	54	16942	16960	16979	16998	17017	17036
55	09260	09285	09310	09335	09360	09385	55	17054	17073	17092	17111	17129	17148
56	09409	09434	09458	09483	09507	09532	56	17167	17185	17204	17222	17241	17259
57	09556	09581	09605	09629	09654	09678	57	17277	17296	17314	17333	17351	17369
58	09703	09727	09752	09776	09801	09825	58	17388	17406	17425	17443	17462	17480
59	5.09853	09874	09899	09923	09947	09971	59	5.17498	17517	17535	17554	17572	17590

TABLE XXXVIII.

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TO FIND THE CORRECTION OF THE COMPUTED LATITUDE.

PART I. /The Latitude and Declination being of the same Name.

Arg. Lat.	Argument. DECLINATION OF THE SUN.											
	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°
1°	0	100	200	301	401	502	603	705	807	910	1014	1118
2	50	0	50	100	151	201	252	302	353	405	457	509
3	67	33	0	33	67	101	134	168	202	236	271	306
4	75	50	25	0	25	50	76	101	126	152	178	204
5	80	60	40	20	0	20	40	61	81	102	122	143
6	83	67	50	34	17	0	17	34	51	68	85	102
7	86	71	57	43	29	14	0	14	29	43	58	73
8	88	75	63	50	38	25	12	0	13	26	38	51
9	89	78	67	56	45	33	22	11	0	11	22	34
10	90	80	70	60	50	40	30	20	10	0	10	20
11	91	82	73	64	55	46	37	28	19	10	0	9
12	92	84	75	67	59	51	43	34	26	18	9	0
13	92	85	77	69	62	54	46	39	32	24	16	8
14	93	86	79	72	65	58	51	44	37	30	22	15
15	93	87	81	74	68	61	54	48	41	34	28	21
16	94	88	82	76	70	63	57	51	45	39	32	26
17	94	88	83	77	72	66	60	54	48	42	36	30
18	95	89	84	79	73	68	63	57	52	46	41	35
19	95	90	85	80	75	70	65	60	54	49	44	38
20	95	90	86	81	76	71	66	61	57	52	47	42
21	96	91	86	82	78	73	68	63	59	54	50	45
22	96	91	87	83	79	74	70	66	61	56	52	47
23	96	92	88	84	80	75	71	67	63	59	54	50
24	96	92	88	84	81	76	72	69	65	60	56	52
25	96	92	89	85	82	78	74	70	66	62	58	54
26	96	93	89	86	83	79	75	72	68	64	60	56
27	97	93	90	86	83	79	76	73	69	65	62	58
28	97	93	90	87	84	80	77	74	70	67	64	60
29	97	94	91	88	84	81	78	75	72	69	66	62
30	97	94	91	88	85	82	79	76	73	70	67	63
31	97	94	91	88	85	83	79	77	74	71	68	65
32	97	94	92	89	86	83	80	78	75	72	69	66
33	97	95	92	89	87	84	81	79	76	73	70	67
34	97	95	92	90	87	84	82	79	77	74	71	68
35	98	95	93	90	88	85	83	80	77	75	72	70
36	98	95	93	90	88	86	83	81	78	76	73	71
37	98	95	93	91	88	86	84	82	79	77	74	72
38	98	96	93	91	89	87	84	83	80	78	75	73
39	98	96	94	91	89	87	85	83	81	78	76	74
40	98	96	94	92	90	87	85	83	81	79	77	74
41	98	96	94	92	90	88	86	84	82	80	78	75
42	98	96	94	92	90	88	86	84	82	80	78	76
43	98	96	94	92	91	89	87	85	83	81	79	77
44	98	96	95	93	91	89	87	85	84	82	80	78
45	98	97	95	93	91	89	88	86	84	82	81	79
46	98	97	95	93	92	90	88	86	85	83	81	79
47	99	97	95	93	92	90	89	87	85	84	82	80
48	99	97	95	94	92	90	89	87	86	84	82	80
49	99	97	95	94	92	91	89	88	86	85	83	81
50	99	97	96	94	93	91	90	88	87	85	83	81
51	99	97	96	94	93	92	90	89	87	86	84	82
52	99	97	96	95	93	92	90	89	88	86	84	83
53	99	97	96	95	93	92	91	89	88	87	85	83
54	99	97	96	95	94	92	91	90	89	87	86	84
55	99	98	96	95	94	93	91	90	89	88	86	85
56	99	98	96	95	94	93	92	91	89	88	87	86
57	99	98	97	95	94	93	92	91	90	89	87	86
58	99	98	97	96	95	93	92	91	90	89	88	87
59	100	98	97	96	95	94	93	92	91	89	88	87
60	100	98	97	96	95	94	93	92	91	90	89	88

TO FIND THE CORRECTION OF THE COMPUTED LATITUDE.

PART I. The Latitude and Declination being of the same Name.

Arg. Lat.	Argument. DECLINATION OF THE SUN.												
	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°
10	1222	1328	1435	1543	1652	1762	1873	1985	2099	2225	2332	2391	2491
2	561	614	667	721	775	830	886	942	999	1057	1115	1145	1145
3	341	376	411	447	483	520	557	594	632	671	710	750	780
4	230	257	283	310	337	365	392	429	449	478	507	522	522
5	164	185	206	228	249	271	294	316	339	362	385	397	397
6	119	137	155	173	191	209	228	246	265	284	304	314	314
7	88	103	118	133	149	165	180	196	213	229	246	254	254
8	64	77	91	104	117	131	145	159	173	187	202	209	209
9	46	57	69	81	93	105	117	129	142	155	168	174	174
10	31	42	55	63	73	84	95	106	118	129	141	147	147
11	19	28	38	48	58	67	77	87	98	108	118	123	123
12	9	18	26	35	44	53	62	71	80	90	100	105	105
13	0	8	16	24	33	41	49	57	66	74	84	88	88
14	7	0	7	15	23	30	38	46	54	62	70	74	74
15	14	7	0	6	14	21	28	36	43	51	59	62	62
16	19	13	6	0	6	13	20	27	34	41	48	52	52
17	25	19	12	7	0	6	12	18	26	32	38	42	42
18	29	24	17	12	6	0	6	12	19	24	30	34	34
19	33	28	22	17	11	6	0	6	12	17	23	26	26
20	37	32	26	21	16	11	5	0	6	11	16	20	20
21	40	35	30	25	20	15	10	5	0	5	10	13	13
22	43	38	34	29	25	19	15	10	5	0	5	7	7
23	46	41	37	33	29	23	19	14	10	5	0	2	2
24	49	44	40	36	32	27	23	18	14	9	5	0	0
25	51	47	43	39	34	30	26	22	18	13	9	7	7
26	53	49	45	42	37	33	30	26	22	17	13	11	11
27	55	51	47	44	40	36	33	29	25	21	17	15	15
28	57	53	50	46	43	39	36	32	28	24	21	18	18
29	58	55	52	48	45	41	38	34	31	27	24	21	21
30	59	57	54	50	47	43	40	37	34	30	27	25	25
31	61	58	55	52	49	46	43	40	36	33	30	28	28
32	63	60	57	54	51	48	45	42	39	35	32	30	30
33	64	62	59	56	53	50	47	44	41	38	35	33	33
34	66	63	60	58	55	52	49	46	43	40	37	36	36
35	67	64	62	59	56	54	51	48	45	42	39	38	38
36	68	66	63	61	58	55	53	50	47	44	42	40	40
37	69	67	64	62	59	57	54	52	49	46	44	42	42
38	71	68	66	63	61	58	56	53	51	48	46	44	44
39	72	69	67	65	62	60	57	55	53	50	48	46	46
40	73	70	68	66	63	61	59	57	54	52	49	48	48
41	73	71	69	67	65	63	60	58	56	54	51	50	50
42	74	72	70	68	66	64	62	60	57	55	53	52	52
43	75	73	71	69	67	65	63	61	59	57	54	53	53
44	76	74	72	70	68	66	64	62	60	58	56	55	55
45	77	75	73	71	69	67	65	64	62	60	58	57	57
46	78	76	74	72	70	69	67	66	63	61	59	58	58
47	79	77	75	73	71	70	68	66	64	62	60	59	59
48	79	78	76	74	72	71	69	67	65	64	62	61	61
49	80	78	77	75	73	72	70	68	67	65	63	62	62
50	81	79	77	76	74	73	71	70	68	66	64	64	64
51	81	80	78	77	75	74	72	71	69	67	66	65	65
52	82	81	79	78	76	75	73	72	70	68	67	66	66
53	83	81	80	78	77	75	74	73	71	70	68	67	67
54	83	82	81	79	78	76	75	74	72	71	69	68	68
55	84	83	81	80	79	77	76	75	73	72	70	70	70
56	84	83	82	81	79	78	77	75	74	73	71	71	71
57	85	84	83	81	80	79	78	76	75	74	72	72	72
58	86	84	83	82	81	80	78	77	76	75	73	73	73
59	86	85	84	83	82	80	79	78	77	76	74	74	74
60	87	86	85	83	82	81	80	79	78	77	75	75	75

TO FIND THE CORRECTION OF THE COMPUTED LATITUDE.

PART II. The Latitude and Declination being of a contrary Name.

Arg. Lat.	Argument. DECLINATION OF THE SUN.											
	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°
1°	200	300	400	501	601	702	803	905	1007	1110	1214	1318
2	150	200	250	300	351	401	452	502	553	605	657	709
3	133	167	200	233	267	301	334	368	402	436	471	506
4	125	150	175	200	225	250	276	301	326	352	378	404
5	120	140	160	180	200	220	240	261	281	302	322	303
6	117	133	150	166	183	200	217	234	251	268	285	302
7	114	129	143	157	171	186	200	214	229	243	258	273
8	112	125	137	150	162	175	188	200	213	226	238	251
9	111	122	133	144	155	167	178	189	200	211	220	234
10	110	120	130	140	150	160	170	180	190	200	210	220
11	109	118	127	136	145	154	163	172	181	190	200	209
12	108	116	125	133	141	149	157	166	174	182	191	200
13	108	115	123	131	138	146	154	161	168	176	184	192
14	107	114	121	128	135	142	149	156	163	170	178	185
15	107	113	119	126	132	139	146	152	159	166	172	179
16	106	112	118	124	130	137	143	149	155	161	168	174
17	106	112	117	123	128	134	140	146	152	158	164	170
18	105	111	116	121	127	132	137	143	148	154	159	165
19	105	110	115	120	125	130	135	140	146	151	156	162
20	105	110	114	119	124	129	134	139	143	148	153	158
21	104	109	114	118	122	127	132	137	141	146	150	155
22	104	109	113	117	121	126	130	134	139	144	148	153
23	104	108	112	116	120	125	129	133	137	141	146	150
24	104	108	112	116	119	124	128	131	135	140	144	148
25	104	108	111	115	118	122	126	130	134	138	142	146
26	104	107	111	114	117	121	125	128	132	136	140	144
27	103	107	110	114	117	121	124	127	131	135	138	142
28	103	107	110	113	116	120	123	126	130	133	136	140
29	103	106	109	112	116	119	122	125	128	131	134	138
30	103	106	109	112	115	118	121	124	127	130	133	137
31	103	106	109	112	115	117	121	123	126	129	132	135
32	103	106	108	111	114	117	120	122	125	128	131	134
33	103	105	108	111	113	116	119	121	124	127	130	133
34	103	105	108	110	113	116	118	121	123	126	129	132
35	102	105	107	110	112	115	117	120	123	125	128	130
36	102	105	107	110	112	114	117	119	122	124	127	129
37	102	105	107	109	112	114	116	118	121	123	126	128
38	102	104	107	109	111	113	116	117	120	122	125	127
39	102	104	106	109	111	113	115	117	119	122	124	126
40	102	104	106	108	110	113	115	117	119	121	123	126
41	102	104	106	108	110	112	114	116	118	120	122	125
42	102	104	106	108	110	112	114	116	118	120	122	124
43	102	104	106	108	109	111	113	115	117	119	121	123
44	102	104	105	107	109	111	113	115	116	118	120	122
45	102	103	105	107	109	111	112	114	116	118	119	121
46	102	103	105	107	108	110	112	114	115	117	119	121
47	101	103	105	107	108	110	111	113	115	116	118	120
48	101	103	105	106	108	110	111	113	114	116	118	120
49	101	103	105	106	108	109	111	112	114	115	117	119
50	101	103	104	106	107	109	110	112	113	115	117	119
51	101	103	104	106	107	108	110	111	113	114	116	118
52	101	103	104	105	107	108	110	111	112	114	116	117
53	101	103	104	105	107	108	109	111	112	113	115	117
54	101	103	104	105	106	108	109	110	111	113	114	116
55	101	102	104	105	106	107	109	110	111	112	114	115
56	101	102	103	105	106	107	108	109	111	112	113	114
57	101	102	103	104	106	107	108	109	110	111	113	114
58	101	102	103	104	105	107	108	109	110	111	112	113
59	100	102	103	104	105	106	107	108	109	111	112	113
60	100	102	103	104	105	106	107	108	109	110	111	112

TO FIND THE CORRECTION OF THE COMPUTED LATITUDE.

PART II. The Latitude and Declination being of a contrary Name.

Arg. Lat.	Argument. DECLINATION OF THE SUN.											
	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	234°
1°	1422	1528	1635	1749	1852	1962	2073	2185	2299	2425	2532	2591
2	761	814	867	921	975	1030	1086	1142	1199	1257	1315	1345
3	541	576	611	647	683	720	757	794	832	871	910	932
4	430	457	483	510	537	565	592	620	649	678	707	722
5	364	385	406	428	449	471	494	516	539	562	585	597
6	319	337	355	373	391	409	428	446	465	484	504	514
7	283	303	318	333	349	365	380	396	413	429	446	454
8	264	277	291	304	317	331	345	359	373	387	402	409
9	246	257	269	281	293	305	317	329	342	355	368	374
10	231	242	255	263	273	284	295	306	318	329	341	347
11	219	228	238	248	258	267	277	287	298	308	318	323
12	209	218	226	235	244	253	262	271	280	290	300	305
13	200	208	216	224	233	241	249	257	266	274	284	288
14	193	200	207	215	223	230	238	246	254	262	270	274
15	186	193	200	206	214	221	228	236	243	251	259	262
16	181	187	194	200	206	213	220	227	234	241	248	252
17	175	181	188	193	200	206	212	218	226	232	238	242
18	171	176	183	188	194	200	206	212	219	224	230	234
19	167	172	178	183	189	194	200	206	212	217	223	226
20	163	168	174	179	184	189	195	200	206	211	216	220
21	160	165	170	175	180	185	190	195	200	205	210	213
22	157	162	166	171	175	181	185	190	195	200	205	207
23	154	159	163	167	171	177	181	186	190	195	200	202
24	151	156	160	164	168	173	177	182	186	191	195	198
25	149	153	157	161	166	170	174	178	182	187	191	193
26	147	151	155	158	163	167	170	174	178	183	187	189
27	145	149	153	156	160	164	167	171	175	179	183	185
28	143	147	150	154	157	161	164	168	172	176	179	182
29	142	145	148	152	155	159	162	166	169	173	176	179
30	141	143	146	150	153	157	160	163	166	170	173	175
31	139	142	145	148	151	154	157	160	164	167	170	172
32	137	140	143	146	149	152	155	158	161	165	168	170
33	136	138	141	144	147	150	153	156	159	162	165	167
34	134	137	140	142	145	148	151	154	157	160	163	164
35	133	136	138	141	144	146	149	152	155	158	161	162
36	132	134	137	139	142	145	147	150	153	156	158	160
37	131	133	136	138	141	143	146	148	151	154	156	158
38	129	132	134	137	139	142	144	147	149	152	154	156
39	128	131	133	135	138	140	143	145	147	150	152	154
40	127	130	132	134	137	139	141	143	146	148	151	152
41	127	129	131	133	135	137	140	142	144	146	149	150
42	126	128	130	132	134	136	138	140	143	145	147	148
43	125	127	129	131	133	135	137	139	141	143	146	147
44	124	126	128	130	132	134	136	138	140	142	144	145
45	123	125	127	129	131	133	134	136	138	140	142	143
46	122	124	126	128	130	131	133	135	137	139	141	142
47	121	123	125	127	129	130	132	134	136	138	140	141
48	121	122	124	126	128	129	131	133	135	136	138	139
49	120	122	123	125	127	128	130	132	133	135	137	138
50	119	121	123	124	126	127	129	130	132	134	136	136
51	119	120	122	123	125	126	128	129	131	133	134	135
52	118	119	121	122	124	125	127	128	130	132	133	134
53	117	119	120	122	123	125	126	127	129	130	132	133
54	117	118	119	121	122	124	125	126	128	129	131	132
55	116	117	119	120	121	123	124	125	127	128	130	130
56	116	117	118	119	121	122	123	125	126	127	129	129
57	115	116	117	119	120	121	122	124	125	126	128	128
58	114	116	117	118	119	120	122	123	124	125	127	127
59	114	115	116	117	118	120	121	122	123	124	126	126
60	113	114	115	117	118	119	120	121	122	123	125	125

TO FIND THE CORRECTION OF THE COMPUTED LATITUDE.

N ^o . from Table	Argument.																											
	NUMBER FROM TABLE XXXIX.																											
xxxviii.	2	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
2	10	7	5	4	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	20	13	10	8	7	6	5	4	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	30	20	15	12	10	9	7	7	6	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
8	40	27	20	16	13	11	10	9	8	7	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
10	50	33	25	20	17	14	12	11	10	8	7	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
12	60	40	30	24	20	17	15	13	12	10	9	7	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
14	70	47	35	28	23	20	17	16	14	12	10	9	7	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4
16	80	53	40	32	27	23	20	18	16	13	11	10	9	8	7	6	5	4	4	4	4	4	4	4	4	4	4	4
18	90	60	45	36	30	26	22	20	18	15	13	11	10	9	8	7	6	5	4	4	4	4	4	4	4	4	4	4
20	100	67	50	40	33	29	25	22	20	17	14	12	11	10	9	8	7	6	5	4	4	4	4	4	4	4	4	4
22	110	73	55	44	37	31	27	24	22	18	16	13	12	11	10	9	8	7	6	5	4	4	4	4	4	4	4	4
24	120	80	60	48	40	34	30	27	24	20	17	15	13	12	11	10	9	8	7	6	5	4	4	4	4	4	4	4
26	130	87	65	52	43	37	32	29	26	22	19	16	14	13	12	11	10	9	8	7	6	5	4	4	4	4	4	4
28	140	93	70	56	47	40	35	31	28	23	20	17	16	14	13	12	11	10	9	8	7	6	5	4	4	4	4	4
30	150	100	75	60	50	43	37	33	30	25	21	19	17	15	14	13	12	11	10	9	8	7	6	5	4	4	4	4
32	160	107	80	64	53	46	40	36	32	27	23	20	18	16	15	13	12	11	10	9	8	7	6	5	4	4	4	4
34	170	113	85	68	57	49	42	38	34	28	24	21	19	17	15	14	13	12	11	10	9	8	7	6	5	4	4	4
36	180	120	90	72	60	51	45	40	36	30	26	22	20	18	16	15	14	13	12	11	10	9	8	7	6	5	4	4
38	190	127	95	76	63	54	47	42	38	32	27	23	21	19	17	16	15	14	13	12	11	10	9	8	7	6	5	4
40	200	133	100	80	67	57	50	44	40	33	29	25	22	20	18	17	15	14	13	12	11	10	9	8	7	6	5	4
42	210	140	105	84	70	60	52	47	42	35	30	26	23	21	19	17	16	15	14	13	12	11	10	9	8	7	6	5
44	220	147	110	88	73	63	55	49	44	37	31	27	24	22	20	18	17	16	15	14	13	12	11	10	9	8	7	6
46	230	153	115	92	77	66	57	51	46	38	33	29	26	23	21	19	18	17	16	15	14	13	12	11	10	9	8	7
48	240	160	120	96	80	69	60	54	48	40	34	30	27	24	22	20	18	17	16	15	14	13	12	11	10	9	8	7
50	250	167	125	100	83	71	62	56	50	42	36	31	28	25	23	21	19	18	17	16	15	14	13	12	11	10	9	8
52	260	173	130	104	87	74	65	58	52	43	37	32	29	26	24	22	20	19	18	17	16	15	14	13	12	11	10	9
54	270	180	135	108	90	77	67	60	54	45	39	33	30	27	25	22	21	19	18	17	16	15	14	13	12	11	10	9
56	280	187	140	112	93	80	70	62	56	47	40	35	31	28	25	23	22	20	19	18	17	16	15	14	13	12	11	10
58	290	193	145	116	97	83	72	64	58	48	41	36	32	29	26	24	22	21	19	18	17	16	15	14	13	12	11	10
60	300	200	150	120	100	86	75	67	60	50	43	37	33	30	27	25	23	21	19	18	17	16	15	14	13	12	11	10
62	310	207	155	124	103	89	77	69	62	52	44	39	34	31	28	26	24	22	20	19	18	17	16	15	14	13	12	11
64	320	213	160	128	107	91	80	71	64	53	46	40	36	32	29	27	25	23	21	19	18	17	16	15	14	13	12	11
66	330	220	165	132	110	94	82	73	66	55	47	41	37	33	30	27	25	23	21	19	18	17	16	15	14	13	12	11
68	340	227	170	136	113	97	85	76	68	57	49	42	38	34	31	28	26	24	22	20	19	18	17	16	15	14	13	12
70	350	233	175	140	117	100	87	78	70	58	50	43	39	35	32	29	27	25	23	21	19	18	17	16	15	14	13	12
72	360	240	180	144	120	103	90	80	72	60	51	45	40	36	33	30	28	26	24	22	20	19	18	17	16	15	14	13
74	370	247	185	148	123	106	92	82	74	62	53	46	41	37	34	31	28	26	24	22	20	19	18	17	16	15	14	13
76	380	253	190	152	127	109	95	84	76	63	54	47	42	38	35	32	29	27	25	23	21	19	18	17	16	15	14	13
78	390	260	195	156	130	111	97	87	78	65	56	49	43	39	35	32	30	28	26	24	22	20	19	18	17	16	15	14
80	400	267	200	160	133	114	100	89	80	67	57	50	44	40	36	33	31	29	27	25	23	21	19	18	17	16	15	14
82	410	273	205	164	137	117	102	91	82	68	59	51	46	41	37	34	32	30	28	26	24	22	20	19	18	17	16	15
84	420	280	210	168	140	120	105	93	84	70	60	52	47	42	38	35	32	30	28	26	24	22	20	19	18	17	16	15
86	430	287	215	172	143	123	107	96	86	72	61	53	48	43	39	36	33	31	29	27	25	23	21	19	18	17	16	15
88	440	293	220	176	147	126	110	98	88	73	63	55	49	44	40	37	34	32	30	28	26	24	22	20	19	18	17	16
90	450	300	225	180	150	129	112	100	90	75	64	56	50	45	41	37	35	33	31	29	27	25	23	21	19	18	17	16
92	460	307	230	184	153	131	115	102	92	77	66	57	51	46	42	38	35	33	31	29	27	25	23	21	19	18	17	16
94	470	313	235	188	157	134	117	104	94	78	67	59	52	47	43	39	36	34	32	30	28	26	24	22	20	19	18	17
96	480	320	240	192	160	137	120	107	96	80	69	60	53	48	44	40	37	34	32	30	28	26	24	22	20	19	18	17
98	490	327	245	196	163	140	122	109	98	82	70	61	54	49	45	41	38	35	33	31	29	27	25	23	21	19	18	17
100	500	333	250	200	167	143	125	111	100	83	71	62	56	50	45	42	38	36	34	32	30	28	26	24	22	20	19	18
102	510	340	255	204	170	146	127	113	102	85	73	63	57	51	46	42	39	36	34	32	30	28	26	24	22	20	19	18
104	520	347	260	208	173	149	130	116	104	87	74	65	58	52	47	43	40	37	35	33	31	29	27	25	23	21	19	18
106	530	353	265	212	177	151	132	118	106	88	76	66	59	53	48	44	41	38	36	34	32	30	28	26	24	22	20	19
108	540	360	270	216	180	154	135	120	108	90	77	67	60	54	49	45	42	39	37	35	33	31	29	27	25	23	21	19
1110</																												

TABLE XL.

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TO FIND THE CORRECTION OF THE COMPUTED LATITUDE.

No. from Table xxxviii.	Argument. NUMBER FROM TABLE XXXIX.														
	30	32	34	36	38	40	45	50	55	60	70	80	90	100	110
2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1
8	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1
10	3	3	3	3	3	3	3	2	2	2	1	1	1	1	1
12	4	4	4	4	3	3	3	2	2	2	2	1	1	1	1
14	5	4	4	4	4	4	4	3	3	3	2	2	2	1	1
16	5	5	5	5	4	4	4	3	3	3	2	2	2	2	1
18	6	6	5	5	5	5	4	4	4	3	3	2	2	2	1
20	7	6	6	6	5	5	4	4	4	3	3	2	2	2	1
22	7	7	6	6	6	6	5	4	4	4	3	3	2	2	2
24	8	7	7	7	6	6	5	5	4	4	3	3	3	2	2
26	9	8	8	7	7	7	6	5	5	4	4	3	3	2	2
28	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2
30	10	9	9	8	8	8	7	6	5	5	4	4	3	3	2
32	11	10	9	9	8	8	7	6	6	5	5	4	4	3	3
34	11	11	10	9	9	9	8	7	6	6	5	4	4	3	3
36	12	11	11	10	9	9	8	7	7	6	5	4	4	4	3
38	13	12	11	11	10	10	8	8	7	6	5	4	4	4	3
40	13	12	12	11	11	10	9	8	7	7	6	5	4	4	3
42	14	13	12	12	11	11	9	8	8	7	6	5	5	4	4
44	15	14	13	12	12	11	10	9	8	7	6	5	5	4	4
46	15	14	13	12	12	10	9	8	8	7	6	5	5	4	4
48	16	15	14	13	13	12	11	10	9	8	7	6	5	5	4
50	17	16	15	14	13	13	11	10	9	8	7	6	6	5	4
52	17	16	15	14	14	13	12	10	9	9	7	6	6	5	4
54	18	17	16	15	14	14	12	11	10	9	8	7	6	5	4
56	19	17	16	16	15	14	12	11	10	9	8	7	6	5	4
58	19	18	17	16	15	15	13	12	11	10	8	7	6	5	4
60	20	19	18	17	16	15	13	12	11	10	9	7	7	6	5
62	21	19	18	17	16	16	14	12	11	10	9	8	7	6	5
64	21	20	19	18	17	16	14	13	12	11	9	8	7	6	5
66	22	21	19	18	17	15	13	12	11	9	8	7	7	6	5
68	23	21	20	19	18	17	15	14	12	11	10	8	8	7	6
70	23	22	21	19	18	16	14	13	12	10	9	8	7	6	5
72	24	22	21	20	19	18	16	14	13	12	10	9	8	7	6
74	25	23	22	21	19	19	16	15	13	12	11	9	8	7	6
76	25	24	22	21	20	19	17	15	14	13	11	9	8	7	6
78	26	24	23	22	21	20	17	16	14	13	11	10	9	8	7
80	27	25	24	22	21	20	18	16	15	13	11	10	9	8	7
82	27	26	24	23	22	21	18	16	15	14	12	10	9	8	7
84	28	26	25	23	22	21	19	17	15	14	12	10	9	8	7
86	29	27	25	24	23	22	19	17	16	14	12	11	10	9	8
88	29	27	26	24	23	22	20	18	16	15	13	11	10	9	8
90	30	28	26	25	24	23	20	18	16	15	13	11	10	9	8
92	31	29	27	26	24	23	20	18	17	15	13	11	10	9	8
94	31	29	28	26	25	24	21	19	17	16	13	12	10	9	8
96	32	30	28	27	25	24	21	19	17	16	14	12	11	10	9
98	33	31	29	27	26	25	22	20	18	16	14	12	11	10	9
100	33	31	29	28	26	25	22	20	18	17	14	12	11	10	9
102	34	32	30	28	27	26	23	20	19	17	15	13	11	10	9
104	35	32	31	29	27	26	23	21	19	17	15	13	12	10	9
106	35	33	31	29	28	27	24	21	19	18	15	13	12	11	10
108	36	34	32	30	28	27	24	22	20	18	15	13	12	11	10
110	37	34	32	31	29	28	24	22	20	18	16	14	12	11	10
112	37	35	33	31	29	28	25	22	20	19	16	14	12	11	10
114	38	36	34	32	30	29	25	23	21	19	16	14	13	11	10
116	39	36	34	32	31	29	26	23	21	19	17	15	13	12	10
118	39	37	35	33	31	30	26	24	21	20	17	15	13	12	11
120	40	37	35	33	32	30	27	24	22	20	17	15	13	12	11

TABLE XLI.

PROPORTIONAL LOGARITHMS.

Sec.	0 DEGREE, OR 0 HOUR.									
	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'
0		2.2553	1.9542	1.7785	1.6532	1.5563	1.4771	1.4102	1.3522	1.3010
1	4.0334	2.2481	1.9506	1.7757	1.6514	1.5548	1.4759	1.4091	1.3513	1.3002
2	3.7324	2.2410	1.9470	1.7733	1.6496	1.5534	1.4747	1.4081	1.3504	1.2994
3	3.5563	2.2341	1.9435	1.7710	1.6478	1.5520	1.4735	1.4071	1.3495	1.2986
4	3.4313	2.2272	1.9400	1.7686	1.6460	1.5505	1.4723	1.4060	1.3486	1.2978
5	3.3844	2.2205	1.9365	1.7662	1.6442	1.5491	1.4711	1.4050	1.3477	1.2970
6	3.2553	2.2139	1.9331	1.7639	1.6425	1.5477	1.4699	1.4040	1.3468	1.2962
7	3.1883	2.2073	1.9296	1.7616	1.6407	1.5463	1.4687	1.4030	1.3459	1.2954
8	3.1803	2.2009	1.9262	1.7592	1.6390	1.5449	1.4676	1.4020	1.3450	1.2946
9	3.0792	2.1946	1.9228	1.7570	1.6372	1.5435	1.4664	1.4010	1.3441	1.2939
10	3.0334	2.1883	1.9195	1.7546	1.6355	1.5420	1.4652	1.3999	1.3432	1.2931
11	2.9920	2.1821	1.9161	1.7524	1.6337	1.5406	1.3969	1.3423	1.2923	
12	2.9542	2.1761	1.9128	1.7501	1.6320	1.5393	1.3979	1.3415	1.2915	
13	2.9195	2.1701	1.9096	1.7478	1.6303	1.5379	1.3969	1.3406	1.2907	
14	2.8873	2.1642	1.9063	1.7456	1.6286	1.5365	1.3959	1.3397	1.2899	
15	2.8573	2.1584	1.9031	1.7433	1.6269	1.5351	1.3949	1.3388	1.2891	
16	2.8293	2.1526	1.8999	1.7411	1.6252	1.5337	1.3939	1.3379	1.2883	
17	2.8030	2.1469	1.8967	1.7389	1.6235	1.5323	1.3929	1.3370	1.2875	
18	2.7782	2.1413	1.8935	1.7368	1.6218	1.5310	1.3919	1.3362	1.2868	
19	2.7546	2.1358	1.8904	1.7345	1.6201	1.5296	1.3909	1.3353	1.2860	
20	2.7324	2.1303	1.8873	1.7324	1.6184	1.5283	1.3899	1.3344	1.2852	
21	2.7112	2.1249	1.8842	1.7302	1.6168	1.5269	1.3890	1.3336	1.2845	
22	2.6910	2.1196	1.8811	1.7281	1.6151	1.5255	1.3880	1.3327	1.2837	
23	2.6717	2.1143	1.8781	1.7259	1.6134	1.5242	1.3870	1.3318	1.2829	
24	2.6532	2.1091	1.8751	1.7238	1.6118	1.5229	1.3860	1.3310	1.2821	
25	2.6355	2.1040	1.8720	1.7216	1.6102	1.5215	1.3850	1.3301	1.2814	
26	2.6184	2.0989	1.8690	1.7195	1.6085	1.5202	1.3841	1.3293	1.2806	
27	2.6021	2.0939	1.8661	1.7173	1.6069	1.5189	1.3831	1.3284	1.2798	
28	2.5862	2.0889	1.8631	1.7153	1.6053	1.5175	1.3821	1.3275	1.2791	
29	2.5710	2.0840	1.8602	1.7133	1.6037	1.5162	1.3812	1.3267	1.2783	
30	2.5563	2.0792	1.8573	1.7112	1.6021	1.5149	1.3802	1.3259	1.2775	
31	2.5420	2.0744	1.8544	1.7091	1.6004	1.5136	1.3792	1.3250	1.2768	
32	2.5283	2.0696	1.8516	1.7071	1.5988	1.5123	1.3783	1.3241	1.2760	
33	2.5149	2.0649	1.8487	1.7050	1.5973	1.5110	1.3773	1.3233	1.2753	
34	2.5019	2.0603	1.8459	1.7030	1.5957	1.5097	1.3763	1.3224	1.2745	
35	2.4893	2.0557	1.8431	1.7010	1.5941	1.5084	1.3754	1.3216	1.2737	
36	2.4771	2.0512	1.8403	1.6990	1.5925	1.5071	1.3745	1.3208	1.2730	
37	2.4652	2.0466	1.8375	1.6969	1.5909	1.5058	1.3735	1.3199	1.2722	
38	2.4536	2.0422	1.8347	1.6949	1.5894	1.5045	1.3725	1.3191	1.2715	
39	2.4424	2.0378	1.8320	1.6930	1.5878	1.5032	1.3716	1.3183	1.2707	
40	2.4313	2.0334	1.8293	1.6910	1.5862	1.5019	1.3713	1.3174	1.2700	
41	2.4206	2.0291	1.8266	1.6890	1.5847	1.5006	1.3703	1.3167	1.2692	
42	2.4102	2.0248	1.8239	1.6871	1.5832	1.4994	1.3692	1.3158	1.2685	
43	2.3999	2.0206	1.8212	1.6851	1.5816	1.4981	1.3681	1.3149	1.2677	
44	2.3899	2.0164	1.8186	1.6832	1.5801	1.4968	1.3670	1.3141	1.2670	
45	2.3802	2.0122	1.8159	1.6812	1.5786	1.4956	1.3660	1.3133	1.2663	
46	2.3706	2.0081	1.8133	1.6793	1.5770	1.4943	1.3650	1.3124	1.2655	
47	2.3613	2.0040	1.8107	1.6774	1.5755	1.4931	1.3641	1.3116	1.2648	
48	2.3522	2.0000	1.8081	1.6755	1.5740	1.4918	1.3632	1.3108	1.2640	
49	2.3432	1.9960	1.8055	1.6736	1.5725	1.4906	1.3622	1.3099	1.2633	
50	2.3344	1.9920	1.8030	1.6717	1.5710	1.4893	1.3613	1.3091	1.2626	
51	2.3259	1.9881	1.8004	1.6698	1.5695	1.4881	1.3604	1.3083	1.2618	
52	2.3174	1.9842	1.7979	1.6679	1.5680	1.4869	1.3595	1.3075	1.2611	
53	2.3091	1.9803	1.7954	1.6660	1.5665	1.4856	1.3585	1.3067	1.2603	
54	2.3010	1.9765	1.7929	1.6642	1.5651	1.4844	1.3576	1.3059	1.2596	
55	2.2930	1.9727	1.7904	1.6623	1.5636	1.4832	1.3567	1.3050	1.2589	
56	2.2852	1.9689	1.7879	1.6605	1.5621	1.4820	1.3558	1.3042	1.2582	
57	2.2775	1.9652	1.7855	1.6587	1.5607	1.4808	1.3549	1.3034	1.2574	
58	2.2700	1.9615	1.7830	1.6568	1.5592	1.4795	1.3540	1.3026	1.2567	
59	2.2626	1.9579	1.7805	1.6550	1.5577	1.4783	1.3531	1.3018	1.2560	
	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'

TABLE XLI.
PROPORTIONAL LOGARITHMS.

185

0 DEGREE, or 0 HOUR.											
Sec.	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
0	1.255	1.2139	1.1761	1.1413	1.1091	1.0792	1.0512	1.0248	1.0000	9765	9542
1	1.2545	1.2132	1.1755	1.1408	1.1086	1.0787	1.0507	1.0244	9996	9761	9539
2	1.2538	1.2123	1.1749	1.1402	1.1081	1.0782	1.0502	1.0240	9992	9757	9535
3	1.2531	1.2119	1.1743	1.1397	1.1076	1.0777	1.0498	1.0235	9988	9754	9532
4	1.2524	1.2112	1.1737	1.1391	1.1071	1.0772	1.0493	1.0231	9984	9750	9528
5	1.2517	1.2106	1.1731	1.1385	1.1066	1.0768	1.0489	1.0227	9980	9746	9524
6	1.2510	1.2099	1.1725	1.1380	1.1061	1.0763	1.0484	1.0223	9976	9742	9521
7	1.2502	1.2093	1.1719	1.1374	1.1055	1.0758	1.0480	1.0218	9972	9738	9517
8	1.2495	1.2086	1.1713	1.1369	1.1050	1.0753	1.0475	1.0214	9968	9735	9513
9	1.2488	1.2080	1.1707	1.1363	1.1045	1.0749	1.0471	1.0210	9964	9731	9510
10	1.2481	1.2073	1.1701	1.1358	1.1040	1.0744	1.0466	1.0206	9960	9727	9506
11	1.2474	1.2067	1.1695	1.1352	1.1035	1.0739	1.0462	1.0201	9956	9723	9503
12	1.2467	1.2061	1.1689	1.1347	1.1030	1.0734	1.0458	1.0197	9952	9720	9499
13	1.2459	1.2054	1.1683	1.1341	1.1025	1.0729	1.0453	1.0193	9948	9716	9495
14	1.2452	1.2067	1.1677	1.1336	1.1020	1.0725	1.0448	1.0189	9944	9712	9492
15	1.2445	1.2041	1.1671	1.1331	1.1015	1.0720	1.0444	1.0185	9940	9708	9488
16	1.2438	1.2035	1.1665	1.1325	1.1009	1.0715	1.0440	1.0180	9936	9704	9485
17	1.2431	1.2028	1.1659	1.1319	1.1004	1.0710	1.0435	1.0176	9932	9701	9481
18	1.2424	1.2022	1.1654	1.1314	1.0999	1.0706	1.0431	1.0172	9928	9697	9478
19	1.2417	1.2015	1.1648	1.1309	1.0994	1.0701	1.0426	1.0168	9924	9693	9474
20	1.2410	1.2009	1.1642	1.1303	1.0989	1.0696	1.0422	1.0164	9920	9699	9470
21	1.2403	1.2003	1.1636	1.1296	1.0984	1.0692	1.0418	1.0160	9916	9686	9467
22	1.2396	1.1996	1.1630	1.1292	1.0979	1.0687	1.0413	1.0155	9912	9682	9463
23	1.2389	1.1990	1.1624	1.1287	1.0974	1.0682	1.0408	1.0151	9908	9678	9460
24	1.2382	1.1984	1.1619	1.1282	1.0969	1.0678	1.0404	1.0147	9905	9675	9456
25	1.2375	1.1977	1.1613	1.1276	1.0964	1.0673	1.0400	1.0143	9901	9671	9453
26	1.2368	1.1971	1.1607	1.1271	1.0959	1.0668	1.0395	1.0139	9897	9667	9449
27	1.2362	1.1965	1.1601	1.1266	1.0954	1.0663	1.0391	1.0135	9893	9664	9446
28	1.2355	1.1958	1.1595	1.1260	1.0949	1.0659	1.0386	1.0130	9889	9660	9442
29	1.2348	1.1952	1.1589	1.1255	1.0944	1.0654	1.0382	1.0126	9885	9656	9439
30	1.2341	1.1946	1.1584	1.1249	1.0939	1.0649	1.0378	1.0122	9881	9652	9435
31	1.2334	1.1939	1.1578	1.1244	1.0934	1.0645	1.0373	1.0118	9877	9648	9431
32	1.2327	1.1933	1.1572	1.1238	1.0929	1.0640	1.0369	1.0114	9873	9645	9428
33	1.2320	1.1927	1.1566	1.1233	1.0924	1.0635	1.0365	1.0110	9869	9641	9425
34	1.2313	1.1920	1.1560	1.1228	1.0919	1.0631	1.0360	1.0106	9865	9637	9421
35	1.2306	1.1914	1.1555	1.1222	1.0914	1.0626	1.0356	1.0102	9861	9634	9417
36	1.2300	1.1908	1.1549	1.1217	1.0909	1.0621	1.0352	1.0098	9858	9630	9414
37	1.2293	1.1902	1.1543	1.1212	1.0904	1.0617	1.0347	1.0093	9854	9626	9410
38	1.2286	1.1895	1.1537	1.1206	1.0899	1.0612	1.0343	1.0089	9850	9623	9407
39	1.2279	1.1889	1.1532	1.1201	1.0894	1.0608	1.0339	1.0085	9846	9619	9404
40	1.2272	1.1883	1.1526	1.1196	1.0889	1.0603	1.0334	1.0081	9842	9615	9400
41	1.2265	1.1877	1.1520	1.1191	1.0884	1.0598	1.0330	1.0077	9838	9612	9396
42	1.2259	1.1871	1.1515	1.1186	1.0880	1.0594	1.0326	1.0073	9834	9608	9393
43	1.2252	1.1864	1.1509	1.1180	1.0875	1.0589	1.0321	1.0069	9830	9604	9389
44	1.2245	1.1858	1.1503	1.1175	1.0870	1.0584	1.0317	1.0065	9826	9601	9386
45	1.2239	1.1852	1.1498	1.1170	1.0865	1.0580	1.0313	1.0061	9823	9597	9383
46	1.2232	1.1846	1.1492	1.1164	1.0860	1.0575	1.0308	1.0057	9819	9593	9379
47	1.2225	1.1840	1.1486	1.1159	1.0855	1.0571	1.0304	1.0053	9815	9590	9375
48	1.2218	1.1834	1.1481	1.1154	1.0850	1.0566	1.0300	1.0049	9811	9586	9372
49	1.2212	1.1828	1.1475	1.1148	1.0845	1.0561	1.0295	1.0044	9807	9582	9368
50	1.2205	1.1822	1.1469	1.1143	1.0840	1.0557	1.0291	1.0040	9803	9579	9365
51	1.2198	1.1816	1.1464	1.1138	1.0835	1.0552	1.0287	1.0036	9800	9575	9362
52	1.2192	1.1809	1.1458	1.1133	1.0830	1.0548	1.0282	1.0032	9796	9571	9358
53	1.2185	1.1803	1.1452	1.1128	1.0826	1.0543	1.0278	1.0028	9792	9568	9355
54	1.2178	1.1797	1.1447	1.1123	1.0821	1.0539	1.0274	1.0024	9788	9564	9351
55	1.2172	1.1791	1.1441	1.1117	1.0816	1.0534	1.0269	1.0020	9784	9560	9348
56	1.2165	1.1785	1.1435	1.1112	1.0811	1.0529	1.0265	1.0016	9780	9557	9344
57	1.2158	1.1779	1.1430	1.1107	1.0806	1.0525	1.0261	1.0012	9777	9553	9341
58	1.2152	1.1773	1.1424	1.1102	1.0801	1.0520	1.0257	1.0008	9773	9549	9337
59	1.2145	1.1767	1.1419	1.1096	1.0796	1.0516	1.0252	1.0004	9769	9546	9334
	10'	11'	12'	13	14'	15'	16'	17'	18'	19'	20'

TABLE XLI.
PROPORTIONAL LOGARITHMS.

Sec.	0 DEGREE, OR 0 HOUR.												
	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'	33'
0	9331	9128	8935	8751	8573	8403	8239	8081	7929	7782	7639	7501	7368
1	9327	9125	8932	8748	8570	8400	8236	8078	7926	7779	7637	7499	7365
2	9323	9122	8929	8745	8567	8397	8234	8076	7924	7776	7634	7496	7363
3	9320	9119	8926	8742	8565	8395	8231	8073	7921	7774	7632	7494	7361
4	9317	9115	8923	8739	8562	8392	8228	8071	7919	7772	7630	7492	7359
5	9313	9112	8920	8736	8559	8389	8225	8068	7916	7769	7627	7490	7356
6	9310	9109	8917	8733	8556	8386	8223	8066	7914	7767	7625	7488	7354
7	9306	9105	8913	8730	8553	8383	8220	8063	7911	7764	7623	7485	7352
8	9303	9102	8910	8727	8550	8381	8217	8060	7909	7762	7620	7483	7350
9	9300	9099	8907	8724	8547	8378	8215	8058	7906	7760	7618	7481	7348
10	9296	9096	8904	8721	8544	8375	8212	8055	7904	7757	7616	7478	7345
11	9293	9092	8901	8718	8541	8372	8209	8053	7901	7755	7613	7476	7343
12	9289	9089	8898	8715	8539	8370	8207	8050	7899	7753	7611	7474	7341
13	9286	9086	8895	8712	8536	8367	8204	8047	7896	7750	7609	7472	7339
14	9282	9082	8891	8709	8533	8364	8202	8045	7894	7748	7606	7469	7337
15	9279	9079	8888	8706	8530	8361	8199	8043	7891	7745	7604	7467	7335
16	9276	9076	8885	8703	8527	8358	8196	8040	7889	7743	7602	7465	7332
17	9272	9073	8882	8700	8524	8356	8194	8037	7886	7740	7599	7463	7330
18	9269	9070	8879	8697	8522	8353	8191	8035	7884	7738	7597	7461	7328
19	9265	9066	8876	8694	8519	8350	8188	8032	7881	7736	7595	7458	7326
20	9262	9063	8873	8691	8516	8347	8186	8030	7879	7733	7592	7456	7324
21	9259	9060	8870	8688	8513	8345	8183	8027	7877	7731	7590	7454	7322
22	9255	9056	8867	8685	8510	8342	8180	8025	7874	7729	7588	7452	7319
23	9252	9053	8864	8682	8507	8339	8178	8022	7872	7726	7586	7449	7317
24	9249	9050	8861	8679	8504	8337	8175	8020	7869	7724	7583	7447	7315
25	9245	9047	8857	8676	8501	8334	8172	8017	7867	7721	7581	7445	7313
26	9242	9044	8854	8673	8498	8331	8170	8014	7864	7719	7579	7443	7311
27	9238	9041	8851	8670	8496	8328	8167	8012	7862	7717	7577	7441	7309
28	9235	9037	8848	8667	8493	8326	8164	8009	7859	7714	7574	7438	7306
29	9231	9034	8845	8664	8490	8323	8162	8007	7857	7712	7572	7436	7304
30	9228	9031	8842	8661	8487	8320	8159	8004	7855	7710	7570	7434	7302
31	9225	9027	8839	8658	8484	8317	8157	8002	7852	7707	7567	7431	7300
32	9221	9024	8836	8655	8481	8315	8154	7999	7849	7705	7565	7429	7298
33	9218	9021	8833	8652	8479	8312	8152	7997	7847	7703	7563	7427	7296
34	9215	9018	8830	8649	8476	8309	8149	7994	7844	7700	7560	7425	7294
35	9211	9015	8827	8646	8473	8306	8146	7991	7842	7698	7558	7423	7291
36	9208	9012	8824	8643	8470	8304	8144	7989	7840	7696	7556	7421	7289
37	9205	9008	8820	8640	8467	8301	8141	7986	7837	7693	7553	7418	7287
38	9201	9005	8817	8637	8464	8298	8138	7984	7835	7691	7551	7416	7285
39	9198	9002	8814	8635	8462	8296	8136	7981	7832	7688	7549	7414	7283
40	9195	8999	8811	8632	8459	8293	8133	7979	7830	7686	7546	7411	7281
41	9191	8995	8808	8629	8456	8290	8130	7976	7827	7683	7544	7409	7278
42	9188	8992	8805	8626	8453	8288	8128	7974	7825	7681	7542	7407	7276
43	9185	8989	8802	8623	8450	8285	8125	7971	7823	7679	7540	7405	7274
44	9181	8986	8799	8620	8448	8282	8122	7969	7820	7676	7537	7403	7272
45	9178	8983	8796	8617	8445	8279	8120	7966	7818	7674	7535	7401	7270
46	9175	8980	8793	8614	8442	8277	8117	7964	7815	7672	7533	7398	7268
47	9171	8976	8790	8611	8439	8274	8115	7961	7813	7669	7531	7396	7266
48	9168	8973	8787	8608	8437	8271	8112	7959	7811	7667	7528	7394	7264
49	9165	8970	8784	8605	8434	8268	8109	7956	7808	7665	7526	7392	7261
50	9161	8967	8781	8602	8431	8266	8107	7954	7805	7662	7524	7389	7259
51	9158	8964	8778	8599	8428	8263	8104	7951	7803	7660	7522	7387	7257
52	9155	8960	8775	8596	8425	8260	8102	7949	7801	7658	7519	7385	7255
53	9151	8957	8772	8593	8422	8258	8099	7946	7798	7655	7517	7383	7253
54	9148	8954	8769	8591	8420	8255	8097	7944	7796	7653	7515	7381	7251
55	9145	8951	8766	8588	8417	8252	8094	7941	7793	7651	7512	7378	7248
56	9141	8948	8763	8585	8414	8250	8091	7939	7791	7648	7510	7376	7246
57	9138	8945	8760	8582	8411	8247	8089	7936	7789	7646	7508	7374	7244
58	9135	8942	8757	8579	8408	8244	8086	7934	7786	7644	7506	7372	7242
59	9132	8938	8754	8576	8406	8242	8084	7931	7784	7641	7503	7370	7240
	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'	33'

TABLE XLI.
PROPORTIONAL LOGARITHMS.

187

Sec.	O DEGREE, OR 0 HOUR.															
	34'	35'	36'	37'	38'	39'	40'	41'	42'	43'	44'	45'	46'			
0	7238	7112	6990	6871	6755	6642	6532	6425	6320	6218	6118	6021	5925			
1	7236	7110	6988	6869	6753	6640	6530	6423	6318	6216	6116	6019	5923			
2	7234	7108	6986	6867	6751	6638	6528	6421	6317	6214	6115	6017	5922			
3	7232	7106	6984	6865	6749	6637	6527	6420	6315	6213	6113	6016	5920			
4	7229	7104	6982	6863	6747	6635	6525	6418	6313	6211	6111	6014	5919			
5	7227	7102	6980	6861	6745	6633	6523	6416	6311	6209	6110	6012	5917			
6	7225	7100	6978	6859	6743	6631	6521	6414	6310	6208	6108	6011	5916			
7	7223	7097	6976	6857	6741	6629	6519	6412	6308	6206	6106	6009	5914			
8	7221	7095	6974	6855	6739	6627	6517	6411	6306	6204	6105	6008	5913			
9	7219	7093	6972	6853	6738	6625	6516	6409	6305	6203	6103	6006	5911			
10	7216	7091	6970	6851	6736	6623	6514	6407	6303	6201	6102	6004	5909			
11	7214	7089	6968	6849	6734	6621	6512	6405	6301	6199	6100	6003	5908			
12	7212	7087	6966	6847	6732	6620	6510	6404	6300	6198	6099	6001	5906			
13	7210	7085	6964	6845	6730	6618	6508	6402	6298	6196	6097	6000	5905			
14	7208	7083	6962	6843	6728	6616	6507	6400	6296	6194	6095	5998	5903			
15	7206	7081	6960	6841	6726	6614	6505	6398	6294	6193	6094	5997	5902			
16	7204	7079	6958	6839	6724	6612	6503	6397	6293	6191	6092	5995	5900			
17	7202	7077	6956	6837	6722	6610	6501	6395	6291	6189	6090	5993	5898			
18	7200	7075	6954	6836	6721	6609	6500	6393	6289	6188	6089	5992	5897			
19	7197	7073	6952	6834	6719	6607	6498	6391	6287	6186	6087	5990	5895			
20	7195	7071	6950	6832	6717	6605	6496	6390	6286	6184	6085	5988	5894			
21	7193	7069	6948	6830	6715	6603	6494	6388	6284	6183	6084	5987	5892			
22	7191	7067	6946	6828	6713	6601	6492	6386	6282	6181	6082	5985	5890			
23	7189	7065	6944	6826	6711	6599	6490	6384	6281	6179	6080	5984	5889			
24	7187	7063	6942	6824	6709	6598	6489	6383	6279	6178	6079	5982	5888			
25	7185	7061	6940	6822	6707	6596	6487	6381	6277	6176	6077	5980	5886			
26	7183	7059	6938	6820	6705	6594	6485	6379	6275	6174	6075	5979	5884			
27	7181	7057	6936	6818	6704	6592	6484	6377	6274	6173	6074	5977	5883			
28	7179	7054	6934	6816	6702	6590	6482	6376	6272	6171	6072	5976	5881			
29	7177	7052	6932	6814	6700	6588	6480	6374	6270	6169	6071	5974	5880			
30	7175	7050	6930	6812	6698	6587	6478	6372	6269	6168	6069	5973	5878			
31	7172	7048	6928	6810	6696	6585	6476	6370	6267	6166	6067	5971	5876			
32	7170	7046	6926	6808	6694	6583	6474	6369	6265	6164	6066	5969	5875			
33	7168	7044	6924	6807	6692	6581	6473	6367	6264	6163	6064	5968	5874			
34	7166	7042	6922	6805	6690	6579	6471	6365	6262	6161	6062	5966	5872			
35	7164	7040	6920	6803	6689	6577	6469	6363	6260	6159	6061	5964	5870			
36	7162	7038	6918	6804	6687	6576	6467	6362	6259	6158	6059	5963	5869			
37	7160	7036	6916	6799	6685	6574	6465	6360	6257	6156	6058	5961	5867			
38	7158	7034	6914	6797	6683	6572	6464	6358	6255	6154	6056	5960	5866			
39	7156	7032	6912	6795	6681	6570	6462	6357	6254	6153	6055	5958	5864			
40	7153	7030	6910	6793	6679	6568	6460	6355	6252	6151	6053	5957	5863			
41	7151	7028	6908	6791	6677	6566	6458	6353	6250	6149	6051	5955	5861			
42	7149	7026	6906	6789	6676	6565	6457	6351	6248	6148	6050	5954	5860			
43	7147	7024	6904	6787	6674	6563	6455	6349	6247	6146	6048	5952	5858			
44	7145	7022	6902	6785	6672	6561	6453	6348	6245	6144	6046	5950	5856			
45	7143	7020	6900	6784	6670	6559	6451	6346	6243	6143	6045	5949	5855			
46	7141	7018	6898	6782	6668	6557	6449	6344	6241	6141	6043	5947	5853			
47	7139	7016	6896	6780	6666	6556	6448	6342	6240	6139	6041	5945	5852			
48	7137	7014	6894	6778	6664	6554	6446	6341	6238	6138	6040	5944	5850			
49	7135	7012	6892	6776	6662	6552	6444	6339	6236	6136	6038	5942	5848			
50	7133	7010	6890	6774	6660	6550	6442	6337	6235	6134	6037	5941	5847			
51	7131	7008	6888	6772	6659	6548	6441	6336	6233	6133	6035	5939	5846			
52	7128	7006	6886	6770	6657	6546	6439	6334	6231	6131	6033	5938	5844			
53	7126	7004	6884	6768	6655	6545	6437	6332	6230	6130	6032	5936	5842			
54	7124	7002	6882	6766	6653	6543	6435	6331	6228	6128	6030	5935	5841			
55	7122	7000	6880	6764	6651	6541	6434	6329	6226	6126	6028	5933	5839			
56	7120	6998	6878	6762	6649	6539	6432	6327	6225	6125	6027	5931	5838			
57	7118	6996	6877	6761	6648	6538	6430	6325	6223	6123	6025	5930	5836			
58	7116	6994	6875	6759	6646	6536	6428	6323	6221	6121	6024	5928	5835			
59	7114	6992	6873	6757	6644	6534	6426	6322	6220	6120	6022	5927	5833			
	34'	35'	36'	37'	38'	39'	40'	41'	42'	43'	44'	45'	46'			

TABLE XLI.

PROPORTIONAL LOGARITHMS.

0 DEGREE, OR 0 HOUR.														
Sec.	47'	48'	49'	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	
0	5832	5740	5651	5563	5477	5393	5310	5229	5149	5071	4994	4918	4844	
1	5830	5739	5649	5561	5475	5391	5308	5227	5148	5069	4992	4917	4843	
2	5828	5737	5648	5560	5474	5390	5307	5226	5146	5068	4991	4916	4842	
3	5827	5736	5646	5559	5473	5389	5306	5225	5145	5067	4990	4915	4841	
4	5825	5734	5645	5557	5471	5387	5304	5223	5144	5065	4989	4913	4839	
5	5824	5733	5643	5556	5470	5386	5303	5222	5142	5064	4987	4912	4838	
6	5823	5731	5642	5554	5469	5384	5302	5221	5141	5063	4986	4911	4837	
7	5821	5730	5640	5553	5467	5383	5300	5219	5140	5062	4985	4910	4835	
8	5819	5728	5639	5551	5465	5381	5299	5218	5138	5060	4984	4908	4834	
9	5818	5727	5637	5550	5464	5380	5298	5217	5137	5059	4983	4907	4833	
10	5816	5725	5636	5548	5463	5379	5296	5215	5136	5058	4981	4906	4832	
11	5815	5724	5634	5547	5461	5377	5295	5214	5134	5056	4980	4905	4831	
12	5813	5722	5633	5546	5460	5376	5294	5213	5133	5055	4979	4903	4830	
13	5812	5721	5631	5544	5458	5374	5292	5211	5132	5054	4977	4902	4828	
14	5810	5719	5630	5543	5457	5373	5291	5210	5130	5053	4976	4901	4827	
15	5809	5718	5629	5541	5456	5372	5290	5209	5129	5051	4975	4900	4826	
16	5807	5716	5627	5540	5454	5370	5288	5207	5128	5050	4973	4898	4824	
17	5805	5715	5626	5538	5453	5369	5287	5206	5127	5049	4972	4897	4823	
18	5804	5713	5624	5537	5452	5368	5285	5205	5125	5048	4971	4896	4822	
19	5802	5712	5623	5535	5450	5366	5284	5203	5124	5046	4970	4895	4821	
20	5801	5710	5621	5534	5449	5365	5283	5202	5123	5045	4968	4893	4820	
21	5800	5709	5620	5533	5447	5364	5281	5201	5122	5044	4967	4892	4819	
22	5798	5707	5618	5531	5446	5362	5280	5199	5120	5042	4966	4891	4817	
23	5796	5706	5617	5530	5444	5361	5278	5198	5119	5041	4965	4890	4816	
24	5795	5704	5615	5528	5443	5359	5277	5197	5118	5040	4964	4889	4815	
25	5793	5703	5614	5527	5441	5358	5276	5195	5116	5038	4962	4887	4813	
26	5792	5701	5612	5525	5440	5356	5274	5194	5115	5037	4961	4886	4812	
27	5790	5700	5611	5524	5439	5355	5273	5193	5114	5036	4960	4885	4811	
28	5789	5698	5609	5522	5437	5354	5272	5191	5112	5035	4958	4883	4810	
29	5787	5697	5608	5521	5436	5352	5270	5190	5111	5033	4957	4882	4809	
30	5786	5695	5607	5520	5435	5351	5269	5189	5110	5032	4956	4881	4808	
31	5784	5694	5605	5518	5433	5350	5268	5187	5108	5031	4955	4880	4806	
32	5783	5693	5604	5517	5432	5348	5266	5186	5107	5029	4953	4878	4805	
33	5781	5691	5602	5516	5430	5347	5265	5185	5106	5028	4952	4877	4804	
34	5779	5689	5601	5514	5429	5345	5264	5183	5104	5027	4951	4876	4802	
35	5778	5688	5599	5512	5427	5344	5262	5182	5103	5026	4950	4875	4801	
36	5777	5686	5598	5511	5426	5343	5261	5181	5102	5025	4949	4874	4800	
37	5775	5685	5596	5510	5425	5341	5260	5179	5100	5023	4947	4873	4799	
38	5773	5683	5595	5508	5423	5340	5258	5178	5099	5022	4946	4871	4798	
39	5772	5682	5594	5507	5422	5339	5257	5177	5098	5021	4945	4870	4797	
40	5770	5680	5592	5505	5420	5337	5255	5175	5097	5019	4943	4869	4795	
41	5769	5679	5590	5504	5419	5336	5254	5174	5096	5018	4942	4867	4794	
42	5768	5677	5589	5503	5418	5335	5253	5173	5094	5017	4941	4866	4793	
43	5766	5676	5587	5501	5416	5333	5251	5171	5093	5015	4940	4865	4792	
44	5764	5674	5586	5500	5415	5332	5250	5170	5091	5014	4938	4864	4790	
45	5763	5673	5585	5498	5414	5331	5249	5169	5090	5013	4937	4863	4789	
46	5761	5671	5583	5497	5412	5329	5247	5167	5089	5012	4936	4861	4788	
47	5760	5670	5582	5495	5411	5328	5246	5166	5087	5010	4934	4860	4787	
48	5758	5669	5580	5494	5409	5326	5245	5165	5086	5009	4933	4859	4786	
49	5757	5667	5579	5492	5408	5325	5243	5163	5085	5008	4932	4858	4784	
50	5755	5665	5577	5491	5406	5323	5242	5162	5084	5006	4931	4856	4783	
51	5754	5664	5576	5490	5405	5322	5241	5161	5082	5005	4930	4855	4782	
52	5752	5662	5574	5488	5404	5321	5239	5159	5081	5004	4928	4854	4781	
53	5751	5661	5573	5487	5402	5319	5238	5158	5080	5003	4927	4853	4779	
54	5749	5660	5572	5486	5401	5318	5237	5157	5079	5002	4926	4852	4778	
55	5748	5658	5570	5484	5399	5317	5235	5155	5077	5000	4924	4850	4777	
56	5746	5656	5569	5482	5398	5315	5234	5154	5076	4999	4923	4849	4776	
57	5745	5655	5567	5481	5397	5314	5233	5153	5075	4998	4922	4848	4775	
58	5743	5654	5566	5480	5395	5312	5231	5152	5073	4996	4921	4846	4773	
59	5742	5652	5564	5478	5394	5311	5230	5150	5072	4995	4919	4845	4772	
	47'	48'	49'	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	

TABLE XLI.
PROPORTIONAL LOGARITHMS.

Sec.	1 DEGREE, OR 1 HOUR.													
	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'
0	4771	4699	4629	4559	4491	4424	4357	4292	4228	4164	4102	4040	3979	3919
1	4770	4698	4627	4558	4490	4422	4356	4291	4226	4163	4101	4039	3978	3918
2	4769	4697	4626	4557	4489	4421	4355	4290	4225	4162	4100	4038	3977	3917
3	4768	4696	4625	4556	4488	4420	4354	4289	4224	4161	4099	4037	3976	3917
4	4766	4694	4624	4555	4486	4419	4353	4287	4223	4160	4098	4036	3975	3916
5	4765	4693	4623	4553	4485	4418	4352	4286	4222	4159	4097	4035	3974	3915
6	4764	4692	4622	4552	4484	4417	4351	4285	4221	4158	4096	4034	3973	3914
7	4763	4691	4620	4551	4483	4416	4349	4284	4220	4157	4094	4033	3972	3913
8	4761	4690	4619	4550	4482	4415	4348	4283	4219	4156	4093	4032	3971	3912
9	4760	4689	4618	4549	4481	4414	4347	4282	4218	4155	4092	4031	3970	3911
10	4759	4687	4617	4548	4479	4412	4346	4281	4217	4154	4091	4030	3969	3910
11	4758	4686	4616	4547	4478	4411	4345	4280	4216	4153	4090	4029	3968	3909
12	4757	4685	4615	4546	4477	4410	4344	4279	4215	4152	4089	4028	3967	3908
13	4755	4684	4614	4545	4476	4409	4343	4278	4214	4151	4088	4027	3966	3907
14	4754	4683	4612	4544	4475	4408	4342	4277	4213	4150	4087	4026	3965	3906
15	4753	4682	4611	4543	4474	4407	4341	4276	4212	4149	4086	4025	3964	3905
16	4752	4680	4610	4541	4473	4406	4340	4275	4211	4147	4085	4024	3963	3904
17	4751	4679	4609	4540	4472	4405	4339	4274	4210	4146	4084	4023	3962	3903
18	4750	4678	4608	4539	4471	4404	4338	4273	4209	4145	4083	4022	3961	3902
19	4748	4677	4606	4537	4469	4402	4336	4271	4207	4144	4082	4021	3960	3901
20	4747	4676	4605	4536	4468	4401	4335	4270	4206	4143	4081	4020	3959	3900
21	4746	4675	4604	4535	4467	4400	4334	4269	4205	4142	4080	4019	3958	3899
22	4745	4673	4603	4534	4466	4399	4333	4268	4204	4141	4079	4018	3957	3898
23	4743	4672	4602	4533	4465	4398	4332	4267	4203	4140	4078	4017	3956	3897
24	4742	4671	4601	4532	4464	4397	4331	4266	4202	4139	4077	4016	3955	3896
25	4741	4670	4600	4530	4463	4396	4330	4265	4201	4138	4076	4015	3954	3895
26	4740	4669	4598	4529	4461	4395	4329	4264	4200	4137	4075	4014	3953	3894
27	4739	4668	4597	4528	4460	4394	4328	4263	4199	4136	4074	4013	3952	3893
28	4737	4666	4596	4527	4459	4392	4327	4262	4198	4135	4073	4012	3951	3892
29	4736	4665	4595	4526	4458	4391	4326	4261	4197	4134	4072	4011	3950	3891
30	4735	4664	4594	4525	4457	4390	4325	4260	4196	4133	4071	4010	3949	3890
31	4734	4663	4593	4524	4456	4389	4323	4258	4195	4132	4070	4009	3948	3889
32	4733	4661	4591	4523	4455	4388	4322	4257	4194	4131	4069	4008	3947	3888
33	4732	4660	4590	4522	4454	4387	4321	4256	4193	4130	4068	4007	3946	3887
34	4730	4659	4589	4520	4452	4386	4320	4255	4191	4129	4067	4006	3945	3886
35	4729	4658	4588	4519	4451	4385	4319	4254	4190	4128	4066	4005	3944	3885
36	4728	4657	4587	4518	4450	4384	4318	4253	4189	4127	4065	4004	3943	3884
37	4727	4656	4586	4517	4449	4382	4317	4252	4188	4126	4064	4003	3942	3883
38	4725	4654	4585	4516	4448	4381	4316	4251	4187	4125	4063	4002	3941	3882
39	4724	4653	4584	4515	4447	4380	4315	4250	4186	4124	4062	4001	3940	3881
40	4723	4652	4582	4513	4446	4379	4313	4249	4185	4122	4061	4000	3939	3880
41	4722	4651	4581	4512	4445	4378	4312	4248	4184	4121	4060	3999	3938	3879
42	4721	4650	4580	4511	4444	4377	4311	4247	4183	4120	4059	3998	3937	3878
43	4719	4648	4579	4510	4442	4376	4310	4246	4182	4119	4057	3997	3936	3877
44	4718	4647	4578	4509	4441	4375	4309	4245	4181	4118	4056	3996	3935	3876
45	4717	4646	4577	4508	4440	4374	4308	4244	4180	4117	4055	3995	3934	3875
46	4716	4645	4575	4507	4439	4372	4307	4242	4179	4116	4054	3993	3933	3874
47	4715	4644	4574	4506	4438	4371	4306	4241	4178	4115	4053	3992	3932	3873
48	4714	4643	4573	4505	4437	4370	4305	4240	4177	4114	4052	3991	3931	3872
49	4712	4641	4572	4503	4436	4369	4304	4239	4176	4113	4051	3990	3930	3871
50	4711	4640	4571	4502	4435	4368	4303	4238	4175	4112	4050	3989	3929	3870
51	4710	4639	4570	4501	4434	4367	4302	4237	4174	4111	4049	3988	3928	3869
52	4709	4638	4568	4500	4432	4366	4300	4236	4173	4110	4048	3987	3927	3868
53	4708	4637	4567	4499	4431	4365	4299	4235	4172	4109	4047	3986	3926	3867
54	4707	4636	4566	4498	4430	4364	4298	4234	4171	4108	4046	3985	3925	3866
55	4705	4634	4565	4496	4429	4363	4297	4233	4169	4107	4045	3984	3924	3865
56	4704	4633	4564	4495	4428	4362	4296	4232	4168	4106	4044	3983	3923	3864
57	4703	4632	4563	4494	4427	4361	4295	4231	4167	4105	4043	3982	3922	3863
58	4702	4631	4561	4493	4426	4359	4294	4230	4166	4104	4042	3981	3921	3862
59	4700	4630	4560	4492	4425	4358	4293	4229	4165	4103	4041	3980	3920	3861
	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'

TABLE XLI.

PROPORTIONAL LOGARITHMS.

Sec.	1 DEGREE, OR 1 HOUR.																		
	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'				
0	3802	3745	3688	3632	3576	3522	3468	3415	3362	3310	3259	3208	3158	3108	3059				
1	3801	3744	3687	3631	3575	3521	3467	3414	3361	3309	3258	3207	3157	3107	3058				
2	3800	3743	3686	3630	3574	3520	3466	3413	3360	3308	3257	3206	3156	3106	3057				
3	3799	3742	3685	3629	3573	3519	3465	3412	3359	3307	3256	3205	3155	3105	3056				
4	3798	3741	3684	3628	3573	3518	3464	3411	3358	3306	3255	3204	3154	3105	3056				
5	3797	3740	3683	3627	3572	3517	3463	3410	3358	3306	3254	3203	3153	3104	3055				
6	3796	3739	3682	3626	3571	3516	3463	3409	3357	3305	3253	3203	3153	3103	3054				
7	3795	3738	3681	3625	3570	3515	3462	3408	3356	3304	3253	3202	3152	3102	3053				
8	3794	3737	3680	3624	3569	3514	3461	3407	3355	3303	3252	3201	3151	3101	3052				
9	3793	3736	3679	3623	3568	3514	3460	3407	3354	3302	3251	3200	3150	3101	3052				
10	3792	3735	3678	3622	3567	3513	3459	3406	3353	3301	3250	3199	3149	3100	3051				
11	3791	3734	3677	3621	3566	3512	3458	3405	3352	3300	3249	3198	3148	3099	3050				
12	3791	3733	3677	3621	3565	3511	3457	3404	3351	3300	3248	3198	3148	3098	3049				
13	3790	3732	3676	3620	3564	3510	3456	3403	3351	3299	3247	3197	3147	3097	3048				
14	3789	3731	3675	3619	3563	3509	3455	3402	3350	3298	3247	3196	3146	3096	3047				
15	3788	3730	3674	3618	3563	3508	3454	3401	3349	3297	3246	3195	3145	3096	3047				
16	3787	3729	3673	3617	3562	3507	3454	3400	3348	3296	3245	3194	3144	3095	3046				
17	3786	3728	3672	3616	3561	3506	3453	3400	3347	3295	3244	3193	3143	3094	3045				
18	3785	3727	3671	3615	3560	3506	3452	3399	3346	3294	3243	3193	3143	3093	3044				
19	3784	3726	3670	3614	3559	3505	3451	3398	3345	3294	3242	3192	3142	3092	3043				
20	3783	3725	3669	3613	3558	3504	3450	3397	3344	3293	3241	3191	3141	3091	3043				
21	3782	3725	3668	3612	3557	3503	3449	3396	3344	3292	3241	3190	3140	3091	3042				
22	3781	3724	3667	3611	3556	3502	3448	3395	3343	3291	3240	3189	3139	3090	3041				
23	3780	3723	3666	3610	3555	3501	3447	3394	3342	3290	3239	3188	3138	3089	3040				
24	3779	3722	3665	3610	3555	3500	3446	3393	3341	3289	3238	3188	3138	3088	3039				
25	3778	3721	3664	3609	3554	3499	3445	3393	3340	3288	3237	3187	3137	3087	3038				
26	3777	3720	3663	3608	3553	3498	3445	3392	3339	3287	3236	3186	3136	3086	3037				
27	3776	3719	3663	3607	3552	3497	3444	3391	3338	3287	3236	3185	3135	3086	3037				
28	3775	3718	3662	3606	3551	3496	3443	3390	3338	3286	3235	3184	3134	3085	3036				
29	3774	3717	3661	3605	3550	3496	3442	3389	3337	3285	3234	3183	3133	3084	3035				
30	3773	3716	3660	3604	3549	3495	3441	3388	3336	3284	3233	3183	3133	3083	3034				
31	3772	3715	3659	3603	3548	3494	3440	3387	3335	3283	3232	3182	3132	3082	3034				
32	3771	3714	3658	3602	3547	3493	3439	3386	3334	3282	3231	3181	3131	3082	3033				
33	3770	3713	3657	3601	3546	3492	3438	3386	3333	3282	3231	3180	3130	3081	3032				
34	3769	3712	3656	3600	3545	3491	3438	3385	3332	3281	3230	3179	3129	3080	3031				
35	3768	3711	3655	3599	3544	3490	3437	3384	3331	3280	3229	3178	3128	3079	3030				
36	3768	3710	3654	3598	3544	3489	3436	3383	3331	3279	3228	3178	3128	3078	3030				
37	3767	3709	3653	3597	3543	3488	3435	3382	3330	3278	3227	3177	3127	3078	3029				
38	3766	3708	3652	3596	3542	3487	3434	3381	3329	3277	3226	3176	3126	3077	3028				
39	3765	3708	3651	3596	3541	3487	3433	3380	3328	3276	3225	3175	3125	3076	3027				
40	3764	3707	3650	3595	3540	3486	3432	3379	3327	3276	3225	3174	3124	3075	3026				
41	3763	3706	3649	3594	3539	3485	3431	3378	3326	3275	3224	3173	3123	3074	3025				
42	3762	3705	3649	3593	3538	3484	3431	3378	3325	3274	3223	3173	3123	3073	3025				
43	3761	3704	3648	3592	3537	3483	3430	3377	3325	3273	3222	3172	3122	3073	3024				
44	3760	3703	3647	3591	3536	3482	3429	3376	3324	3272	3221	3171	3121	3072	3023				
45	3759	3702	3646	3590	3535	3481	3428	3375	3323	3271	3220	3170	3120	3071	3022				
46	3758	3701	3645	3589	3534	3480	3427	3374	3322	3270	3219	3169	3119	3070	3022				
47	3757	3700	3644	3588	3533	3479	3426	3373	3321	3270	3219	3168	3119	3069	3021				
48	3756	3699	3643	3587	3533	3479	3425	3372	3320	3269	3218	3168	3118	3069	3020				
49	3755	3698	3642	3586	3532	3478	3424	3371	3319	3268	3217	3167	3117	3068	3019				
50	3754	3697	3641	3585	3531	3477	3423	3371	3318	3267	3216	3166	3116	3067	3018				
51	3753	3696	3640	3584	3530	3476	3422	3370	3318	3266	3215	3165	3115	3066	3018				
52	3752	3695	3639	3583	3529	3475	3422	3369	3317	3265	3214	3164	3114	3065	3017				
53	3751	3694	3638	3583	3528	3474	3421	3368	3316	3264	3214	3163	3114	3064	3016				
54	3750	3693	3637	3582	3527	3473	3420	3367	3315	3264	3213	3163	3113	3064	3015				
55	3749	3692	3636	3581	3526	3472	3419	3366	3314	3263	3212	3162	3112	3063	3014				
56	3748	3691	3635	3580	3525	3471	3418	3365	3313	3262	3211	3161	3111	3062	3013				
57	3747	3691	3635	3579	3525	3471	3417	3365	3313	3262	3210	3160	3110	3061	3013				
58	3746	3690	3634	3578	3524	3470	3416	3364	3312	3260	3209	3159	3109	3060	3012				
59	3745	3689	3633	3577	3523	3469	3415	3363	3311	3259	3209	3158	3109	3060	3011				
	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'				

TABLE XLI.
PROPORTIONAL LOGARITHMS.

1 DEGREE, OR 1 HOUR.																
Sec.	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	40'	41'	42'	43'	44'	
0	3010	2962	2915	2868	2821	2775	2730	2685	2640	2596	2553	2510	2467	2424	2382	
1	3009	2961	2914	2867	2821	2775	2729	2684	2640	2596	2552	2509	2466	2424	2382	
2	3009	2961	2913	2866	2820	2774	2728	2683	2639	2595	2551	2508	2465	2423	2381	
3	3008	2960	2912	2866	2819	2773	2728	2683	2638	2594	2551	2507	2465	2422	2380	
4	3007	2959	2912	2865	2818	2772	2727	2682	2637	2593	2550	2507	2464	2421	2380	
5	3006	2958	2911	2864	2818	2772	2726	2681	2637	2593	2549	2506	2463	2421	2379	
6	3005	2958	2910	2863	2817	2771	2725	2681	2636	2592	2548	2505	2462	2420	2378	
7	3005	2957	2909	2862	2816	2770	2725	2680	2635	2591	2548	2504	2462	2419	2378	
8	3004	2956	2908	2862	2815	2769	2724	2679	2634	2590	2547	2504	2461	2419	2377	
9	3003	2955	2908	2861	2815	2769	2723	2678	2634	2590	2546	2503	2460	2418	2376	
10	3002	2954	2907	2860	2814	2768	2722	2678	2633	2589	2545	2502	2460	2417	2375	
11	3001	2954	2906	2859	2813	2767	2722	2677	2632	2588	2545	2502	2459	2417	2375	
12	3001	2953	2905	2859	2812	2766	2721	2676	2632	2588	2544	2501	2458	2416	2374	
13	3000	2952	2905	2858	2811	2766	2720	2675	2631	2587	2543	2500	2457	2415	2373	
14	2999	2951	2904	2857	2811	2765	2719	2675	2630	2586	2543	2499	2457	2414	2373	
15	2998	2950	2903	2856	2810	2764	2719	2674	2629	2585	2542	2499	2456	2414	2372	
16	2997	2950	2902	2855	2809	2763	2718	2673	2629	2585	2541	2498	2455	2413	2371	
17	2997	2949	2901	2855	2808	2762	2717	2672	2628	2584	2540	2497	2455	2412	2371	
18	2996	2948	2901	2854	2808	2762	2716	2672	2627	2583	2540	2497	2454	2412	2370	
19	2995	2947	2900	2853	2807	2761	2716	2671	2626	2582	2539	2496	2453	2411	2369	
20	2994	2946	2899	2852	2806	2760	2715	2670	2626	2582	2538	2495	2452	2410	2368	
21	2993	2946	2898	2852	2805	2760	2714	2669	2625	2581	2538	2494	2452	2410	2368	
22	2993	2945	2898	2851	2804	2759	2713	2669	2624	2580	2537	2494	2451	2409	2367	
23	2992	2944	2897	2850	2804	2758	2713	2668	2623	2579	2536	2493	2450	2408	2366	
24	2991	2943	2896	2849	2803	2757	2712	2667	2623	2579	2535	2492	2450	2408	2366	
25	2990	2942	2895	2848	2802	2756	2711	2666	2622	2578	2535	2492	2449	2407	2365	
26	2989	2942	2894	2848	2801	2755	2710	2666	2621	2577	2534	2491	2448	2406	2364	
27	2989	2941	2894	2847	2801	2755	2710	2665	2621	2577	2533	2490	2448	2405	2364	
28	2988	2940	2893	2846	2800	2754	2709	2664	2620	2576	2532	2489	2447	2405	2363	
29	2987	2939	2892	2845	2799	2753	2708	2663	2619	2575	2532	2489	2446	2404	2362	
30	2986	2939	2891	2845	2798	2753	2707	2663	2618	2574	2531	2488	2445	2403	2362	
31	2985	2938	2890	2844	2798	2752	2707	2662	2618	2574	2530	2487	2445	2403	2361	
32	2985	2937	2890	2843	2797	2751	2706	2661	2617	2573	2530	2487	2444	2402	2360	
33	2984	2936	2889	2842	2796	2750	2705	2660	2616	2572	2529	2486	2443	2401	2359	
34	2983	2935	2888	2841	2795	2750	2704	2660	2615	2572	2528	2485	2443	2400	2359	
35	2982	2934	2887	2841	2795	2749	2704	2659	2615	2571	2527	2484	2442	2400	2358	
36	2981	2934	2887	2840	2794	2748	2703	2658	2614	2570	2527	2484	2441	2399	2357	
37	2981	2933	2886	2839	2793	2747	2702	2657	2613	2569	2526	2483	2440	2398	2357	
38	2980	2932	2885	2838	2792	2747	2701	2657	2612	2569	2525	2482	2440	2398	2356	
39	2979	2931	2884	2838	2792	2746	2701	2656	2612	2568	2525	2482	2439	2397	2355	
40	2978	2931	2883	2837	2791	2745	2700	2655	2611	2567	2524	2481	2438	2396	2355	
41	2977	2930	2883	2836	2790	2744	2699	2654	2610	2566	2523	2480	2438	2396	2354	
42	2977	2929	2882	2835	2789	2743	2698	2654	2610	2566	2522	2480	2437	2395	2353	
43	2976	2928	2881	2834	2788	2743	2698	2653	2609	2565	2522	2479	2436	2394	2353	
44	2975	2927	2880	2834	2788	2742	2697	2652	2608	2564	2521	2478	2436	2394	2352	
45	2974	2927	2880	2833	2787	2741	2696	2652	2607	2564	2520	2477	2435	2393	2351	
46	2973	2926	2879	2832	2786	2741	2695	2651	2607	2563	2520	2477	2434	2392	2350	
47	2973	2925	2878	2831	2785	2740	2695	2650	2606	2562	2519	2476	2433	2391	2350	
48	2972	2924	2877	2831	2785	2739	2694	2649	2605	2561	2518	2475	2433	2391	2349	
49	2971	2923	2876	2830	2784	2738	2693	2649	2604	2561	2517	2474	2432	2390	2348	
50	2970	2923	2876	2829	2783	2737	2692	2648	2604	2560	2517	2474	2431	2389	2348	
51	2969	2922	2875	2828	2782	2737	2692	2647	2603	2559	2516	2473	2431	2389	2347	
52	2969	2921	2874	2828	2782	2736	2691	2646	2602	2558	2515	2472	2430	2388	2346	
53	2968	2920	2873	2827	2781	2735	2690	2646	2601	2558	2514	2472	2429	2387	2346	
54	2967	2920	2873	2826	2780	2735	2689	2645	2601	2557	2514	2471	2429	2387	2345	
55	2966	2919	2872	2825	2779	2734	2689	2644	2600	2556	2513	2470	2428	2386	2344	
56	2965	2918	2871	2824	2778	2733	2688	2643	2599	2556	2512	2470	2427	2385	2344	
57	2965	2917	2870	2824	2778	2732	2687	2643	2599	2555	2512	2469	2426	2384	2343	
58	2964	2916	2869	2823	2777	2731	2686	2641	2598	2554	2511	2468	2426	2384	2342	
59	2963	2916	2869	2822	2776	2731	2686	2641	2597	2553	2510	2467	2425	2383	2341	
	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	40'	41'	42'	43'	44'	

TABLE XLI.

PROPORTIONAL LOGARITHMS.

Sec.	1 DEGREE, OR 1 HOUR.																	
	45'	46'	47'	48'	49'	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'			
0	2341	2300	2259	2218	2178	2139	2098	2061	2022	1984	1946	1908	1871	1834	1797			
1	2340	2299	2258	2218	2178	2138	2098	2060	2021	1983	1945	1907	1870	1833	1797			
2	2339	2298	2257	2217	2177	2137	2098	2059	2021	1982	1944	1907	1870	1833	1796			
3	2339	2298	2257	2216	2176	2137	2098	2059	2020	1982	1944	1906	1869	1832	1795			
4	2338	2297	2256	2216	2176	2136	2097	2058	2019	1981	1943	1906	1868	1831	1795			
5	2337	2296	2255	2215	2175	2135	2096	2057	2019	1980	1943	1905	1868	1831	1794			
6	2337	2296	2255	2214	2174	2135	2096	2057	2018	1980	1942	1904	1867	1830	1794			
7	2336	2295	2254	2214	2174	2134	2095	2056	2017	1979	1941	1904	1867	1830	1793			
8	2335	2294	2253	2213	2173	2133	2094	2055	2017	1979	1941	1903	1866	1829	1792			
9	2335	2294	2253	2212	2172	2133	2094	2055	2016	1978	1940	1903	1865	1828	1792			
10	2334	2293	2252	2212	2172	2132	2093	2054	2016	1977	1939	1902	1865	1828	1791			
11	2333	2292	2251	2211	2171	2132	2092	2053	2015	1977	1939	1901	1864	1827	1791			
12	2333	2291	2251	2210	2170	2131	2092	2053	2014	1976	1938	1901	1863	1827	1790			
13	2332	2291	2250	2210	2170	2130	2091	2052	2014	1975	1938	1900	1863	1826	1789			
14	2331	2290	2249	2209	2169	2130	2090	2051	2013	1975	1937	1899	1862	1825	1789			
15	2331	2289	2249	2208	2169	2129	2090	2051	2012	1974	1936	1899	1862	1825	1788			
16	2330	2289	2248	2208	2168	2128	2089	2050	2012	1973	1936	1898	1861	1824	1787			
17	2329	2288	2247	2207	2167	2128	2088	2050	2011	1973	1935	1898	1860	1823	1787			
18	2328	2287	2247	2206	2167	2127	2088	2049	2010	1972	1934	1897	1860	1823	1786			
19	2328	2287	2246	2206	2166	2126	2087	2048	2010	1972	1934	1896	1859	1822	1786			
20	2327	2286	2245	2205	2165	2126	2086	2048	2009	1971	1933	1896	1858	1822	1785			
21	2326	2285	2245	2204	2165	2125	2086	2047	2009	1970	1933	1895	1858	1821	1785			
22	2326	2285	2244	2204	2164	2124	2085	2046	2008	1970	1932	1894	1857	1820	1784			
23	2325	2284	2243	2203	2163	2124	2084	2046	2007	1969	1931	1894	1857	1820	1783			
24	2324	2283	2242	2202	2163	2123	2084	2045	2007	1968	1931	1893	1856	1819	1783			
25	2324	2283	2242	2202	2162	2123	2083	2044	2006	1968	1930	1893	1855	1819	1782			
26	2323	2282	2241	2201	2161	2122	2083	2044	2005	1967	1929	1892	1855	1818	1781			
27	2322	2281	2241	2200	2161	2121	2082	2043	2005	1967	1929	1891	1854	1817	1781			
28	2322	2281	2240	2200	2160	2120	2081	2042	2004	1966	1928	1891	1854	1817	1780			
29	2321	2280	2239	2199	2159	2120	2081	2042	2004	1965	1927	1890	1853	1816	1780			
30	2320	2279	2239	2198	2159	2119	2080	2041	2003	1965	1927	1889	1852	1815	1779			
31	2319	2279	2238	2198	2158	2119	2079	2041	2002	1964	1926	1889	1852	1815	1778			
32	2319	2278	2237	2197	2157	2118	2079	2040	2001	1963	1926	1888	1851	1814	1778			
33	2318	2277	2237	2196	2157	2117	2078	2039	2001	1963	1925	1888	1850	1814	1777			
34	2317	2276	2236	2196	2156	2116	2077	2039	2000	1962	1924	1887	1850	1813	1777			
35	2317	2276	2235	2195	2155	2116	2077	2038	2000	1961	1924	1886	1849	1812	1776			
36	2316	2275	2235	2194	2155	2115	2076	2037	1999	1961	1923	1886	1849	1812	1775			
37	2315	2274	2234	2194	2154	2115	2075	2037	1998	1960	1922	1885	1848	1811	1775			
38	2315	2274	2233	2193	2153	2114	2075	2036	1998	1960	1922	1884	1847	1811	1774			
39	2314	2273	2233	2192	2153	2113	2074	2035	1997	1959	1921	1884	1847	1810	1774			
40	2313	2272	2232	2192	2152	2113	2073	2035	1996	1958	1921	1883	1846	1809	1773			
41	2313	2272	2231	2191	2151	2112	2073	2034	1996	1958	1920	1883	1846	1809	1772			
42	2312	2271	2231	2190	2151	2111	2072	2033	1995	1957	1919	1882	1845	1808	1772			
43	2311	2270	2230	2190	2150	2111	2071	2033	1994	1956	1919	1881	1844	1808	1771			
44	2311	2270	2229	2189	2149	2110	2071	2032	1994	1956	1918	1881	1844	1807	1771			
45	2310	2269	2229	2188	2149	2109	2070	2032	1993	1955	1918	1880	1843	1806	1770			
46	2309	2268	2228	2188	2148	2109	2070	2031	1993	1955	1917	1879	1842	1806	1769			
47	2308	2268	2227	2187	2147	2108	2069	2030	1992	1954	1916	1879	1842	1805	1769			
48	2308	2267	2227	2186	2147	2107	2068	2030	1991	1953	1916	1878	1841	1805	1768			
49	2307	2266	2226	2186	2146	2107	2068	2029	1991	1953	1915	1878	1841	1804	1768			
50	2306	2266	2225	2185	2145	2106	2067	2028	1990	1952	1914	1877	1840	1803	1767			
51	2306	2265	2225	2184	2145	2105	2066	2028	1989	1951	1914	1876	1839	1803	1766			
52	2305	2264	2224	2184	2144	2105	2066	2027	1989	1951	1913	1876	1839	1802	1766			
53	2304	2264	2223	2183	2143	2104	2065	2026	1988	1950	1912	1875	1838	1801	1765			
54	2304	2263	2223	2182	2143	2103	2064	2026	1987	1950	1912	1875	1838	1801	1765			
55	2303	2262	2222	2182	2142	2103	2064	2025	1987	1949	1911	1874	1837	1800	1764			
56	2302	2262	2221	2181	2141	2102	2063	2024	1986	1948	1911	1873	1836	1800	1763			
57	2302	2261	2220	2180	2141	2101	2062	2024	1986	1948	1910	1873	1836	1799	1763			
58	2301	2260	2220	2180	2140	2101	2062	2023	1985	1947	1909	1872	1835	1798	1763			
59	2300	2260	2219	2179	2139	2100	2061	2023	1984	1946	1909	1871	1834	1797	1761			
	45'	46'	47'	48'	49'	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'			

TABLE XLI.
PROPORTIONAL LOGARITHMS.

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2 DEGREES, OR 2 HOURS.																
Sec.	0'	1'	2'	3'	4'	5'	6'	7'	8	9'	10'	11 ^A	12'	13'	14'	
0	1761	1725	1689	1654	1619	1584	1549	1515	1481	1447	1413	1380	1347	1314	1282	
1	1760	1724	1688	1653	1618	1583	1548	1514	1480	1446	1413	1379	1346	1314	1281	
2	1760	1724	1688	1652	1617	1582	1548	1514	1479	1446	1412	1379	1346	1313	1281	
3	1759	1723	1687	1652	1617	1582	1547	1513	1479	1445	1412	1378	1345	1313	1280	
4	1758	1722	1687	1651	1616	1581	1547	1512	1478	1445	1411	1378	1345	1312	1279	
5	1758	1722	1686	1651	1616	1581	1546	1512	1478	1444	1410	1377	1344	1311	1279	
6	1757	1721	1686	1650	1615	1580	1546	1511	1477	1443	1410	1377	1344	1311	1278	
7	1757	1721	1685	1650	1614	1580	1545	1511	1477	1443	1409	1376	1343	1310	1278	
8	1756	1720	1684	1649	1614	1579	1544	1510	1476	1442	1409	1376	1343	1310	1277	
9	1755	1719	1684	1648	1613	1578	1544	1510	1476	1442	1408	1375	1342	1309	1277	
10	1755	1719	1683	1648	1613	1578	1543	1509	1475	1441	1408	1374	1341	1309	1276	
11	1754	1718	1683	1647	1612	1577	1543	1508	1474	1441	1407	1374	1341	1308	1276	
12	1754	1718	1682	1647	1612	1577	1542	1508	1474	1440	1407	1373	1340	1308	1275	
13	1753	1717	1681	1646	1611	1576	1542	1507	1473	1440	1406	1373	1340	1307	1275	
14	1752	1716	1681	1645	1610	1575	1541	1507	1473	1439	1405	1372	1339	1307	1274	
15	1752	1716	1680	1645	1610	1575	1540	1506	1472	1438	1405	1372	1339	1306	1274	
16	1751	1715	1680	1644	1609	1574	1540	1506	1472	1438	1404	1371	1338	1305	1273	
17	1751	1715	1679	1644	1609	1574	1539	1505	1471	1437	1404	1371	1338	1305	1272	
18	1750	1714	1678	1643	1608	1573	1539	1504	1470	1437	1403	1370	1337	1304	1272	
19	1749	1713	1678	1642	1607	1573	1538	1504	1470	1436	1403	1369	1337	1304	1271	
20	1749	1713	1677	1642	1607	1572	1538	1503	1469	1436	1402	1369	1336	1303	1271	
21	1748	1712	1677	1641	1606	1571	1537	1503	1469	1435	1402	1368	1335	1303	1270	
22	1748	1712	1676	1641	1606	1571	1536	1502	1468	1434	1401	1368	1335	1302	1270	
23	1747	1711	1675	1640	1605	1570	1536	1502	1468	1434	1400	1367	1334	1302	1269	
24	1746	1711	1675	1640	1605	1570	1535	1501	1467	1433	1400	1367	1334	1301	1269	
25	1746	1710	1674	1639	1604	1569	1535	1500	1466	1433	1399	1366	1333	1301	1268	
26	1745	1709	1674	1638	1603	1569	1534	1500	1466	1432	1399	1366	1333	1300	1268	
27	1745	1709	1673	1638	1603	1568	1534	1499	1465	1432	1398	1365	1332	1300	1267	
28	1744	1708	1673	1637	1602	1567	1533	1499	1465	1431	1398	1365	1332	1299	1267	
29	1743	1708	1672	1637	1602	1567	1532	1498	1464	1431	1397	1364	1331	1298	1266	
30	1743	1707	1671	1636	1601	1566	1532	1498	1464	1430	1397	1363	1331	1298	1266	
31	1742	1706	1671	1635	1600	1566	1531	1497	1463	1429	1396	1363	1330	1297	1265	
32	1742	1706	1670	1635	1600	1565	1531	1496	1463	1429	1395	1362	1329	1297	1264	
33	1741	1705	1670	1634	1599	1565	1530	1496	1462	1428	1395	1362	1329	1296	1264	
34	1740	1705	1669	1634	1599	1564	1529	1495	1461	1428	1394	1361	1328	1296	1263	
35	1740	1704	1668	1633	1598	1563	1529	1495	1461	1427	1394	1361	1328	1295	1263	
36	1739	1703	1668	1633	1598	1563	1528	1494	1460	1427	1393	1360	1327	1295	1262	
37	1739	1703	1667	1632	1597	1562	1528	1494	1460	1426	1393	1360	1327	1294	1262	
38	1738	1702	1667	1631	1596	1562	1527	1493	1459	1426	1392	1359	1326	1294	1261	
39	1737	1702	1666	1631	1596	1561	1527	1493	1459	1425	1392	1359	1326	1293	1261	
40	1737	1701	1665	1630	1595	1560	1526	1492	1458	1424	1391	1358	1325	1292	1260	
41	1736	1700	1665	1630	1595	1560	1525	1491	1457	1424	1390	1357	1325	1292	1260	
42	1736	1700	1664	1629	1594	1559	1525	1491	1457	1423	1390	1357	1324	1291	1259	
43	1735	1699	1664	1628	1593	1559	1524	1490	1456	1423	1389	1356	1323	1291	1258	
44	1734	1699	1663	1628	1593	1558	1524	1490	1456	1422	1389	1356	1323	1290	1258	
45	1734	1698	1663	1627	1592	1558	1523	1489	1455	1422	1388	1355	1322	1290	1257	
46	1733	1697	1662	1627	1592	1557	1523	1489	1455	1421	1388	1355	1322	1289	1257	
47	1733	1697	1661	1626	1591	1556	1522	1488	1454	1420	1387	1354	1321	1289	1256	
48	1732	1696	1661	1626	1591	1556	1522	1487	1454	1420	1387	1354	1321	1288	1256	
49	1731	1696	1660	1625	1590	1555	1521	1487	1453	1419	1386	1353	1320	1288	1255	
50	1731	1695	1660	1624	1589	1555	1520	1486	1452	1419	1386	1352	1320	1287	1255	
51	1730	1694	1659	1624	1589	1554	1520	1486	1452	1418	1385	1352	1319	1287	1254	
52	1730	1694	1658	1623	1588	1554	1519	1485	1451	1418	1384	1351	1319	1286	1254	
53	1729	1693	1658	1623	1588	1553	1519	1485	1451	1417	1384	1351	1318	1285	1253	
54	1728	1693	1657	1622	1587	1552	1518	1484	1450	1417	1383	1350	1317	1285	1253	
55	1728	1692	1657	1621	1586	1552	1518	1483	1450	1416	1383	1350	1317	1284	1252	
56	1727	1691	1656	1621	1586	1551	1517	1483	1449	1415	1382	1349	1316	1284	1251	
57	1727	1691	1655	1620	1585	1551	1516	1482	1449	1415	1382	1349	1316	1283	1251	
58	1726	1690	1655	1620	1585	1550	1516	1482	1448	1414	1381	1348	1315	1283	1250	
59	1725	1690	1654	1619	1584	1550	1515	1481	1447	1414	1381	1347	1315	1282	1250	
	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	

PROPORTIONAL LOGARITHMS.

2 DEGREES, OR 2 HOURS.															
sec.	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'
0	1249	1217	1186	1154	1123	1091	1061	1030	0999	0969	0939	0909	0880	0850	0821
1	1249	1217	1185	1153	1122	1091	1060	1029	0999	0969	0939	0909	0879	0850	0820
2	1248	1216	1184	1153	1121	1090	1059	1029	0998	0968	0938	0908	0879	0849	0820
3	1248	1216	1184	1152	1121	1090	1059	1028	0998	0968	0938	0908	0878	0849	0819
4	1247	1215	1183	1152	1120	1089	1058	1028	0997	0967	0937	0907	0878	0848	0819
5	1247	1215	1183	1151	1120	1089	1058	1027	0997	0967	0937	0907	0877	0848	0818
6	1246	1214	1182	1151	1119	1088	1057	1027	0996	0966	0936	0906	0877	0847	0818
7	1246	1214	1182	1150	1119	1088	1057	1026	0996	0966	0936	0906	0876	0847	0817
8	1245	1213	1181	1150	1118	1087	1056	1026	0995	0965	0935	0905	0876	0846	0817
9	1245	1213	1181	1149	1118	1087	1056	1025	0995	0965	0935	0905	0875	0846	0816
10	1244	1212	1180	1149	1117	1086	1055	1025	0994	0964	0934	0904	0875	0845	0816
11	1243	1211	1180	1148	1117	1086	1055	1024	0994	0964	0934	0904	0874	0845	0815
12	1243	1211	1179	1148	1116	1085	1054	1024	0993	0963	0933	0903	0874	0844	0815
13	1242	1210	1179	1147	1116	1085	1054	1023	0993	0963	0933	0903	0873	0844	0814
14	1242	1210	1178	1147	1115	1084	1053	1023	0992	0962	0932	0902	0873	0843	0814
15	1241	1209	1178	1146	1115	1084	1053	1022	0992	0962	0932	0902	0872	0843	0814
16	1241	1209	1177	1146	1114	1083	1052	1022	0991	0961	0931	0901	0872	0842	0813
17	1240	1208	1177	1145	1114	1083	1052	1021	0991	0961	0931	0901	0871	0842	0813
18	1240	1208	1176	1145	1113	1082	1051	1021	0990	0960	0930	0900	0871	0841	0812
19	1239	1207	1175	1144	1113	1082	1051	1020	0990	0960	0930	0900	0870	0841	0812
20	1239	1207	1175	1143	1112	1081	1050	1020	0989	0959	0929	0899	0870	0840	0811
21	1238	1206	1174	1143	1112	1081	1050	1019	0989	0959	0929	0899	0869	0840	0811
22	1238	1206	1174	1142	1111	1080	1049	1019	0988	0958	0928	0898	0869	0839	0810
23	1237	1205	1173	1142	1111	1080	1049	1018	0988	0958	0928	0898	0868	0839	0810
24	1237	1205	1173	1141	1110	1079	1048	1018	0987	0957	0927	0897	0868	0838	0809
25	1236	1204	1172	1141	1110	1079	1048	1017	0987	0957	0927	0897	0867	0838	0809
26	1235	1203	1172	1140	1109	1078	1047	1017	0986	0956	0926	0896	0867	0837	0808
27	1235	1203	1171	1140	1109	1078	1047	1016	0986	0956	0926	0896	0866	0837	0808
28	1234	1202	1171	1139	1108	1077	1046	1016	0985	0955	0925	0895	0866	0836	0807
29	1234	1202	1170	1139	1107	1076	1046	1015	0985	0955	0925	0895	0865	0836	0807
30	1233	1201	1170	1138	1107	1076	1045	1015	0984	0954	0924	0894	0865	0835	0806
31	1233	1201	1169	1138	1106	1075	1045	1014	0984	0954	0924	0894	0864	0835	0806
32	1232	1200	1169	1137	1106	1075	1044	1014	0983	0953	0923	0893	0864	0834	0805
33	1232	1200	1168	1137	1105	1074	1044	1013	0983	0953	0923	0893	0863	0834	0805
34	1231	1199	1168	1136	1105	1074	1043	1013	0982	0952	0922	0892	0863	0833	0804
35	1231	1199	1167	1136	1104	1073	1043	1012	0982	0952	0922	0892	0862	0833	0804
36	1230	1198	1167	1135	1104	1073	1042	1012	0981	0951	0921	0891	0862	0833	0803
37	1230	1198	1166	1135	1103	1072	1042	1011	0981	0951	0921	0891	0861	0832	0803
38	1229	1197	1165	1134	1103	1072	1041	1010	0980	0950	0920	0890	0861	0832	0802
39	1229	1197	1165	1134	1102	1071	1041	1010	0980	0950	0920	0890	0860	0831	0802
40	1228	1196	1164	1133	1102	1071	1040	1009	0979	0949	0919	0889	0860	0831	0801
41	1227	1196	1164	1132	1101	1070	1039	1009	0979	0949	0919	0889	0859	0830	0801
42	1227	1195	1163	1132	1101	1070	1039	1008	0978	0948	0918	0888	0859	0830	0801
43	1226	1194	1163	1131	1100	1069	1038	1008	0978	0948	0918	0888	0858	0829	0800
44	1226	1194	1162	1131	1100	1069	1038	1007	0977	0947	0917	0887	0858	0829	0800
45	1225	1193	1162	1130	1099	1068	1037	1007	0977	0947	0917	0887	0857	0828	0799
46	1225	1193	1161	1130	1099	1068	1037	1006	0976	0946	0916	0886	0857	0828	0799
47	1224	1192	1161	1129	1098	1067	1036	1006	0976	0946	0916	0886	0856	0827	0798
48	1224	1192	1160	1129	1098	1067	1036	1005	0975	0945	0915	0885	0856	0827	0798
49	1223	1191	1160	1128	1097	1066	1035	1005	0975	0945	0915	0885	0855	0826	0797
50	1223	1191	1159	1128	1097	1066	1035	1004	0974	0944	0914	0884	0855	0826	0797
51	1222	1190	1159	1127	1096	1065	1034	1004	0974	0944	0914	0884	0855	0825	0796
52	1222	1190	1158	1127	1096	1065	1034	1003	0973	0943	0913	0883	0854	0825	0796
53	1221	1189	1158	1126	1095	1064	1033	1003	0973	0943	0913	0883	0854	0824	0795
54	1221	1189	1157	1126	1095	1064	1033	1002	0972	0942	0912	0883	0853	0824	0795
55	1220	1188	1157	1125	1094	1063	1032	1002	0972	0942	0912	0882	0853	0823	0794
56	1219	1188	1156	1125	1093	1063	1032	1001	0971	0941	0911	0882	0852	0823	0794
57	1219	1187	1156	1124	1093	1062	1031	1001	0971	0941	0911	0881	0852	0822	0793
58	1218	1187	1155	1124	1092	1062	1031	1000	0970	0940	0910	0881	0851	0822	0793
59	1218	1186	1154	1123	1092	1061	1030	1000	0970	0940	0910	0880	0851	0821	0792
	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'

PROPORTIONAL LOGARITHMS.

	2 DEGREES, OR 2 HOURS.															
Sec.	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	40'	41'	42'	43'	44'	
0	0792	0763	0734	0706	0678	0649	0621	0594	0566	0539	0512	0484	0458	0431	0404	
1	0791	0762	0734	0705	0677	0649	0621	0593	0566	0538	0511	0484	0457	0430	0404	
2	0791	0762	0733	0705	0677	0648	0621	0593	0565	0538	0511	0484	0457	0430	0403	
3	0790	0762	0733	0704	0676	0648	0620	0592	0565	0537	0510	0483	0456	0430	0403	
4	0790	0761	0732	0704	0676	0648	0620	0592	0564	0537	0510	0483	0456	0429	0402	
5	0789	0761	0732	0703	0675	0647	0619	0591	0564	0536	0509	0482	0455	0429	0402	
6	0789	0760	0731	0703	0675	0647	0619	0591	0563	0536	0509	0482	0455	0428	0402	
7	0788	0760	0731	0702	0674	0646	0618	0590	0563	0536	0508	0481	0454	0428	0401	
8	0788	0759	0730	0702	0674	0646	0618	0590	0562	0535	0508	0481	0454	0427	0401	
9	0787	0759	0730	0702	0673	0645	0617	0590	0562	0535	0507	0480	0454	0427	0400	
10	0787	0758	0729	0701	0673	0645	0617	0589	0562	0534	0507	0480	0453	0426	0400	
11	0787	0758	0729	0701	0672	0644	0616	0589	0561	0534	0507	0479	0453	0426	0399	
12	0786	0757	0729	0700	0672	0644	0616	0588	0561	0533	0506	0479	0452	0426	0399	
13	0786	0757	0728	0700	0671	0643	0615	0588	0560	0533	0506	0479	0452	0425	0399	
14	0785	0756	0728	0699	0671	0643	0615	0587	0560	0532	0505	0478	0451	0425	0398	
15	0785	0755	0727	0699	0670	0642	0615	0587	0559	0532	0505	0478	0451	0424	0398	
16	0784	0755	0727	0698	0670	0642	0614	0586	0559	0531	0504	0477	0450	0424	0397	
17	0784	0755	0726	0698	0669	0641	0614	0586	0558	0531	0504	0477	0450	0423	0397	
18	0783	0754	0726	0697	0669	0641	0613	0585	0558	0531	0503	0476	0450	0423	0396	
19	0783	0754	0725	0697	0669	0641	0613	0585	0557	0530	0503	0476	0449	0422	0396	
20	0782	0753	0725	0696	0668	0640	0612	0584	0557	0530	0502	0475	0449	0422	0395	
21	0782	0753	0724	0696	0668	0640	0612	0584	0557	0529	0502	0475	0448	0422	0395	
22	0781	0752	0724	0695	0667	0639	0611	0584	0556	0529	0502	0475	0448	0421	0395	
23	0781	0752	0723	0695	0667	0639	0611	0583	0556	0528	0501	0474	0447	0421	0394	
24	0780	0751	0723	0694	0666	0638	0610	0583	0555	0528	0501	0474	0447	0420	0394	
25	0780	0751	0722	0694	0666	0638	0610	0582	0555	0527	0500	0473	0446	0420	0393	
26	0779	0750	0722	0693	0665	0637	0609	0582	0554	0527	0500	0473	0446	0419	0393	
27	0779	0750	0721	0693	0665	0637	0609	0581	0554	0526	0499	0472	0446	0419	0392	
28	0778	0750	0721	0693	0664	0636	0608	0581	0553	0526	0499	0472	0445	0418	0392	
29	0778	0749	0720	0692	0664	0636	0608	0580	0553	0526	0498	0471	0445	0418	0391	
30	0777	0749	0720	0692	0663	0635	0608	0580	0552	0525	0498	0471	0444	0418	0391	
31	0777	0748	0720	0691	0663	0635	0607	0579	0552	0525	0497	0471	0444	0417	0391	
32	0776	0748	0719	0691	0662	0634	0607	0579	0551	0524	0497	0470	0443	0417	0390	
33	0776	0747	0719	0690	0662	0634	0606	0579	0551	0524	0497	0470	0443	0416	0390	
34	0775	0747	0718	0690	0662	0634	0606	0578	0551	0523	0496	0469	0442	0416	0389	
35	0775	0746	0718	0689	0661	0633	0605	0578	0550	0523	0496	0469	0442	0415	0389	
36	0774	0746	0717	0689	0661	0633	0605	0577	0550	0522	0495	0468	0442	0415	0388	
37	0774	0745	0717	0688	0660	0632	0604	0577	0549	0522	0495	0468	0441	0414	0388	
38	0773	0745	0716	0688	0660	0632	0604	0576	0549	0521	0494	0467	0441	0414	0388	
39	0773	0744	0716	0687	0659	0631	0603	0576	0548	0521	0494	0467	0440	0414	0387	
40	0773	0744	0715	0687	0659	0631	0603	0575	0548	0521	0493	0466	0440	0413	0387	
41	0772	0743	0715	0686	0658	0630	0602	0575	0547	0520	0493	0466	0439	0413	0386	
42	0772	0743	0714	0686	0658	0630	0602	0574	0547	0520	0493	0466	0439	0412	0386	
43	0771	0742	0714	0685	0657	0629	0602	0574	0546	0519	0492	0465	0438	0412	0385	
44	0771	0742	0713	0685	0657	0629	0601	0573	0546	0519	0492	0465	0438	0411	0385	
45	0770	0741	0713	0685	0656	0628	0601	0573	0546	0518	0491	0464	0438	0411	0384	
46	0770	0741	0712	0684	0656	0628	0600	0573	0545	0518	0491	0464	0437	0410	0384	
47	0769	0740	0712	0684	0655	0627	0600	0572	0545	0517	0490	0463	0437	0410	0384	
48	0769	0740	0711	0683	0655	0627	0599	0572	0544	0517	0490	0463	0436	0410	0383	
49	0768	0739	0711	0683	0655	0627	0599	0571	0544	0516	0489	0462	0436	0409	0383	
50	0768	0739	0711	0682	0654	0626	0598	0571	0543	0516	0489	0462	0435	0409	0382	
51	0767	0739	0710	0682	0654	0626	0598	0570	0543	0516	0489	0462	0435	0408	0382	
52	0767	0738	0710	0681	0653	0625	0597	0570	0542	0515	0488	0461	0434	0408	0381	
53	0766	0738	0709	0681	0653	0625	0597	0569	0542	0515	0488	0461	0434	0407	0381	
54	0766	0737	0709	0680	0652	0624	0596	0569	0541	0514	0487	0460	0434	0407	0381	
55	0765	0737	0708	0680	0652	0624	0596	0568	0541	0514	0487	0460	0433	0406	0380	
56	0765	0736	0708	0679	0651	0623	0596	0568	0541	0513	0486	0459	0433	0406	0380	
57	0764	0736	0707	0679	0651	0623	0595	0568	0540	0513	0486	0459	0432	0406	0379	
58	0764	0735	0707	0678	0650	0622	0595	0567	0540	0512	0485	0458	0432	0405	0379	
59	0763	0735	0706	0678	0650	0622	0594	0567	0539	0512	0485	0458	0431	0405	0378	
	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	40'	41'	42'	43'	44'	

TABLE XLI.
PROPORTIONAL LOGARITHMS.

2 DEGREES, OR 2 HOURS.															
47'	46'	47'	48'	49'	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	
0378	0352	0326	0300	0274	0248	0223	0197	0172	0147	0122	0098	0073	0049	0024	
0377	0351	0325	0299	0273	0248	0222	0197	0172	0147	0122	0097	0073	0048	0024	
0377	0351	0325	0299	0273	0247	0222	0197	0171	0146	0121	0097	0072	0048	0023	
0377	0350	0324	0298	0273	0247	0221	0196	0171	0146	0121	0096	0072	0047	0023	
0376	0350	0324	0298	0272	0246	0221	0196	0171	0146	0121	0096	0071	0047	0023	
0376	0349	0323	0297	0272	0246	0221	0195	0170	0145	0120	0096	0071	0046	0022	
0375	0349	0323	0297	0271	0246	0220	0195	0170	0145	0120	0095	0071	0046	0022	
0375	0349	0322	0297	0271	0245	0220	0194	0169	0144	0119	0095	0070	0046	0021	
0374	0348	0322	0296	0270	0245	0219	0194	0169	0144	0119	0094	0070	0045	0021	
0374	0348	0322	0296	0270	0244	0219	0194	0169	0145	0119	0094	0069	0045	0021	
0373	0347	0321	0295	0270	0244	0218	0193	0168	0143	0118	0093	0069	0044	0020	
0373	0347	0321	0295	0269	0244	0218	0193	0168	0143	0118	0093	0068	0044	0020	
0373	0346	0320	0294	0269	0243	0218	0192	0167	0142	0117	0093	0068	0044	0019	
0372	0346	0320	0294	0268	0243	0217	0192	0167	0142	0117	0092	0068	0043	0019	
0372	0346	0319	0294	0268	0242	0217	0192	0166	0141	0117	0092	0067	0043	0018	
0371	0345	0319	0293	0267	0242	0216	0191	0166	0141	0116	0091	0067	0042	0018	
0371	0345	0319	0293	0267	0241	0216	0191	0166	0141	0116	0091	0066	0042	0018	
0370	0344	0318	0292	0267	0241	0216	0190	0165	0140	0115	0091	0066	0042	0017	
0370	0344	0318	0292	0266	0241	0215	0190	0165	0140	0115	0090	0066	0041	0017	
0370	0343	0317	0291	0266	0240	0215	0189	0164	0139	0114	0090	0065	0041	0016	
0369	0343	0317	0291	0265	0240	0214	0189	0164	0139	0114	0089	0065	0040	0016	
0369	0342	0316	0291	0265	0239	0214	0189	0163	0139	0114	0089	0064	0040	0016	
0368	0342	0316	0290	0264	0239	0213	0188	0163	0138	0113	0089	0064	0040	0015	
0368	0342	0316	0290	0264	0238	0213	0188	0163	0138	0113	0088	0064	0039	0015	
0367	0341	0315	0289	0264	0238	0213	0187	0162	0137	0112	0088	0063	0039	0015	
0367	0341	0315	0289	0263	0238	0212	0187	0162	0137	0112	0087	0063	0038	0014	
0366	0340	0314	0288	0263	0237	0212	0186	0161	0136	0112	0087	0062	0038	0014	
0366	0340	0314	0288	0262	0237	0211	0186	0161	0136	0111	0087	0062	0038	0013	
0366	0339	0313	0288	0262	0236	0211	0186	0161	0136	0111	0086	0062	0037	0013	
0365	0339	0313	0287	0261	0236	0210	0185	0160	0135	0110	0086	0061	0037	0012	
0365	0339	0313	0287	0261	0235	0210	0185	0160	0135	0110	0085	0061	0036	0012	
0364	0338	0312	0286	0261	0235	0210	0184	0159	0134	0110	0085	0060	0036	0012	
0364	0338	0312	0286	0260	0235	0209	0184	0159	0134	0109	0084	0060	0035	0011	
0363	0337	0311	0285	0260	0234	0209	0184	0158	0134	0109	0084	0060	0035	0011	
0363	0337	0311	0285	0259	0234	0208	0183	0158	0133	0108	0084	0059	0035	0010	
0363	0337	0311	0285	0259	0233	0208	0183	0158	0133	0108	0083	0059	0034	0010	
0362	0336	0310	0284	0258	0233	0208	0182	0157	0132	0107	0083	0058	0034	0010	
0362	0336	0310	0284	0258	0232	0207	0182	0157	0132	0107	0082	0058	0033	0009	
0361	0335	0309	0283	0258	0232	0207	0181	0156	0131	0107	0082	0057	0033	0009	
0361	0335	0309	0283	0257	0232	0206	0181	0156	0131	0106	0082	0057	0033	0008	
0360	0334	0308	0282	0257	0231	0206	0181	0156	0131	0106	0081	0057	0032	0008	
0360	0334	0308	0282	0256	0231	0205	0180	0155	0130	0105	0081	0056	0032	0008	
0359	0333	0307	0282	0256	0230	0205	0180	0155	0130	0105	0080	0056	0031	0007	
0359	0333	0307	0281	0255	0230	0205	0179	0154	0129	0105	0080	0055	0031	0007	
0359	0332	0306	0281	0255	0229	0204	0179	0154	0129	0104	0080	0055	0031	0006	
0358	0332	0306	0280	0255	0229	0204	0179	0153	0129	0104	0079	0055	0030	0006	
0358	0332	0306	0280	0254	0229	0203	0178	0153	0128	0103	0079	0054	0030	0006	
0357	0331	0305	0279	0254	0228	0203	0178	0153	0128	0103	0078	0054	0029	0005	
0357	0331	0305	0279	0253	0228	0202	0177	0152	0127	0103	0078	0053	0029	0005	
0356	0330	0304	0279	0253	0227	0202	0177	0152	0127	0102	0077	0053	0029	0004	
0356	0330	0304	0278	0252	0227	0202	0176	0151	0126	0102	0077	0053	0028	0004	
0356	0329	0304	0278	0252	0227	0201	0176	0151	0126	0101	0077	0052	0028	0004	
0355	0329	0303	0277	0252	0226	0201	0176	0151	0126	0101	0076	0052	0027	0003	
0355	0329	0303	0277	0251	0226	0200	0175	0150	0125	0100	0076	0051	0027	0003	
0354	0328	0302	0276	0251	0225	0200	0175	0150	0125	0100	0075	0051	0027	0002	
0354	0328	0302	0276	0250	0225	0200	0174	0149	0124	0100	0075	0051	0026	0002	
0353	0327	0301	0276	0250	0224	0199	0174	0149	0124	0099	0075	0050	0026	0002	
0353	0327	0301	0275	0250	0224	0199	0174	0148	0124	0099	0074	0050	0025	0001	
0352	0326	0300	0275	0249	0224	0198	0173	0148	0123	0098	0074	0049	0025	0001	
0352	0326	0300	0274	0249	0223	0198	0173	0148	0123	0098	0073	0049	0025	0000	
45'	46'	47'	48'	49'	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	

FOR COMPUTING THE FINAL EFFECT OF PARALLAX ON THE DISTANCE
BETWEEN THE MOON AND THE SUN, OR A FIXED STAR.

Arg. Par.in Alt.or Dist.	Argument. APPARENT DISTANCE.															
	Add the Difference of the two Numbers taken out of this Table, if the Apparent Distance is less than 90°, and Subtract it if above.															
	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°
Min.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
8	3	3	3	2	2	2	2	2	2	2	2	1	1	1	1	1
10	5	4	4	4	3	3	3	3	3	3	2	2	2	2	2	2
11	6	5	5	5	4	4	4	3	3	3	3	3	3	2	2	2
12	7	6	6	5	5	5	4	4	4	4	3	3	3	3	3	3
13	8	8	7	6	6	6	5	5	5	4	4	4	4	3	3	3
14	10	9	8	7	7	7	6	6	5	5	5	4	4	4	4	4
15	11	10	9	9	8	7	7	6	6	6	5	5	5	5	4	4
16	13	11	11	10	9	8	8	7	7	6	6	6	5	5	5	5
17	14	13	12	11	10	9	9	8	8	7	7	7	6	6	6	5
18	16	15	13	12	11	11	10	9	9	8	8	7	7	7	6	6
19	18	16	15	14	13	12	11	10	10	9	9	8	8	7	7	7
20	20	18	16	15	14	13	12	11	11	10	10	9	9	8	8	7
21	22	20	18	17	15	14	13	13	12	11	11	10	10	9	9	8
22	24	22	20	18	17	16	15	14	13	12	12	11	10	10	9	9
23	26	24	22	20	19	17	16	15	14	13	12	12	11	11	10	10
24	28	26	24	22	20	19	18	16	15	15	14	13	12	12	11	11
25	31	28	26	24	22	20	19	18	17	16	15	14	13	13	12	12
26	33	30	28	26	24	22	21	19	18	17	16	15	15	14	13	13
27	36	33	30	28	26	24	22	21	20	18	17	17	16	15	14	13
28	39	35	32	30	27	25	24	22	21	20	19	18	17	16	15	15
29	42	38	35	32	29	27	26	24	23	21	20	19	18	17	16	16
30	45	40	37	34	31	29	27	26	24	23	22	20	19	19	18	17
31	48	43	39	36	34	31	29	27	26	24	23	22	21	20	19	18
32	51	46	42	39	36	33	31	29	27	26	25	23	22	21	20	19
33	54	49	45	41	38	35	33	31	29	28	26	25	24	22	21	20
34	57	52	47	44	40	38	35	33	31	29	28	26	25	24	23	22
35	61	55	50	46	43	40	37	35	33	31	29	28	26	25	24	23
36	64	58	53	49	45	42	39	37	35	33	31	29	28	27	25	24
37	68	61	56	52	48	45	42	39	37	35	33	31	30	28	27	26
38	71	65	59	55	51	47	44	41	39	37	35	33	31	30	28	27
39	75	68	62	57	53	50	46	43	41	39	36	35	33	31	30	28
40	79	72	66	60	56	52	49	46	43	41	38	36	35	33	31	30
41	83	75	69	63	59	55	51	48	45	43	40	38	36	35	33	31
42	87	79	72	67	62	57	54	50	47	45	42	40	38	36	35	33
43	91	83	76	70	65	60	56	53	50	47	44	42	40	38	36	35
44	96	87	79	73	68	63	59	55	52	49	46	44	42	40	38	36
45	100	91	83	76	71	66	62	58	54	51	49	46	44	42	40	38
46	105	95	87	80	74	69	64	60	57	54	51	48	46	43	41	40
47	109	99	91	83	77	72	67	63	59	56	53	50	48	45	43	41
48	114	103	94	87	81	75	70	66	62	58	55	52	50	47	45	43
49	119	108	98	91	84	78	73	68	64	61	58	55	52	49	47	45
50	124	112	103	94	87	81	76	71	67	63	60	57	54	51	49	47
51	128	117	107	98	91	85	79	74	70	66	62	59	56	53	51	49
52	134	121	111	102	95	88	82	77	73	68	65	61	58	56	53	51
53	139	126	115	106	98	91	85	80	75	71	67	64	61	58	55	53
54	144	131	120	110	102	95	89	83	78	74	70	66	63	60	57	55
55	149	136	124	114	106	98	92	86	81	77	72	69	65	62	59	57
56	155	141	129	118	110	102	95	89	84	79	75	71	68	64	61	59
57	160	146	133	123	114	106	99	93	87	82	78	74	70	67	64	61
58	166	151	138	127	118	109	102	96	90	85	81	76	73	69	66	63
59	172	156	143	131	122	113	106	99	93	88	83	79	75	72	68	65
60	178	161	148	136	126	117	109	103	97	91	86	82	78	74	71	67
61	184	167	152	140	130	121	113	106	100	94	89	85	80	76	73	70
62	190	172	158	145	134	125	117	110	103	97	92	87	83	79	75	72

FOR COMPUTING THE FINAL EFFECT OF PARALLAX ON THE DISTANCE
BETWEEN THE MOON AND THE SUN, OR A FIXED STAR.

Arg. Parallax in Altitude or distance	Argument. APPARENT DISTANCE.												
	Add the Difference of the two Numbers taken out of this Table, if the Apparent Distance is less than 90°, and Subtract it if above.												
	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	38°
Min.	"	"	"	"	"	"	"	"	"	"	"	"	"
5	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	1	1	1	1	1	1	1	1	1	1	1	1
10	2	2	2	2	2	1	1	1	1	1	1	1	1
11	2	2	2	2	2	2	2	2	2	2	1	1	1
12	3	2	2	2	2	2	2	2	2	2	2	2	2
13	3	3	3	3	3	2	2	2	2	2	2	2	2
14	4	3	3	3	3	3	3	3	3	2	2	2	2
15	4	4	4	4	3	3	3	3	3	3	3	3	3
16	5	4	4	4	4	4	4	3	3	3	3	3	3
17	5	5	5	5	4	4	4	4	4	4	3	3	3
18	6	6	5	5	5	5	5	4	4	4	4	4	4
19	6	6	6	6	5	5	5	5	5	4	4	4	4
20	7	7	7	6	6	6	6	5	5	5	5	5	4
21	8	8	7	7	7	6	6	6	6	5	5	5	5
22	9	8	8	8	7	7	7	7	6	6	6	6	5
23	9	9	9	8	8	8	7	7	7	7	6	6	6
24	10	10	9	9	9	8	8	8	7	7	7	7	6
25	11	11	10	10	9	9	9	8	8	8	8	7	7
26	12	12	11	11	10	10	9	9	9	8	8	8	8
27	13	12	12	11	11	11	10	10	9	9	9	8	8
28	14	13	13	12	12	11	11	11	10	10	9	9	9
29	15	14	14	13	13	12	12	11	11	10	10	10	9
30	16	15	15	14	14	13	13	12	12	11	11	10	10
31	17	16	16	15	15	14	13	13	12	12	12	11	11
32	18	18	17	16	15	15	14	14	13	13	12	12	11
33	19	19	18	17	16	16	15	15	14	14	13	13	12
34	21	20	19	18	17	17	16	16	15	14	14	13	13
35	22	21	20	19	19	18	17	16	16	15	15	14	14
36	23	22	21	20	20	19	18	17	17	16	16	15	14
37	24	23	22	22	21	20	19	18	18	17	16	16	15
38	26	25	24	23	22	21	20	19	19	18	17	17	16
39	27	26	25	24	23	22	21	20	20	19	18	18	17
40	29	27	26	25	24	23	22	21	21	20	19	19	18
41	30	29	28	26	25	24	23	23	22	21	20	19	19
42	32	30	29	28	27	26	25	24	23	22	21	20	20
43	33	32	30	29	28	27	26	25	24	23	22	21	21
44	35	33	32	30	29	28	27	26	25	24	23	22	22
45	36	35	33	32	31	29	28	27	26	25	24	23	23
46	38	36	35	33	32	31	30	28	27	26	25	25	24
47	40	38	36	35	33	32	31	30	29	28	27	26	25
48	41	39	38	36	35	33	32	31	30	29	28	27	26
49	43	41	39	38	36	35	34	32	31	30	29	28	27
50	45	43	41	39	38	36	35	34	32	31	30	29	28
51	47	45	43	41	39	38	36	35	34	32	31	30	29
52	48	46	44	43	41	39	38	36	35	34	32	31	30
53	50	48	46	44	42	41	39	38	36	35	34	33	31
54	52	50	48	46	44	42	41	39	38	36	35	34	33
55	54	52	50	48	46	44	42	41	39	38	36	35	34
56	56	54	51	49	47	46	44	42	41	39	38	36	35
57	58	56	53	51	49	47	45	44	42	40	39	38	36
58	60	58	55	53	51	49	47	45	44	42	40	39	38
59	62	60	57	55	53	51	49	47	45	43	42	40	39
60	64	62	59	57	54	52	50	48	47	45	43	42	40
61	67	64	61	59	56	54	52	50	48	46	45	43	42
62	69	66	63	60	58	56	54	52	50	48	46	45	43

FOR COMPUTING THE FINAL EFFECT OF PARALLAX ON THE DISTANCE
BETWEEN THE MOON AND THE SUN, OR A FIXED STAR.

Arg. Parallax in Altitude or distance	Argument. APPARENT DISTANCE.													
	Add the Difference of the two Numbers taken out of this Table, if the Apparent Distance is less than 90°, and Subtract it if above.													
	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	51°	
Min.	"	"	"	"	"	"	"	"	"	"	"	"	"	"
5	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	1	1	1	1	1	1	1	1	1	1	0	0	0	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	
11	1	1	1	1	1	1	1	1	1	1	1	1	1	
12	2	1	1	1	1	1	1	1	1	1	1	1	1	
13	2	2	2	2	2	2	1	1	1	1	1	1	1	
14	2	2	2	2	2	2	2	2	2	2	1	1	1	
15	2	2	2	2	2	2	2	2	2	2	2	2	2	
16	3	3	3	3	2	2	2	2	2	2	2	2	2	
17	3	3	3	3	3	3	3	2	2	2	2	2	2	
18	3	3	3	3	3	3	3	3	3	3	2	2	2	
19	4	4	4	4	3	3	3	3	3	3	3	3	3	
20	4	4	4	4	4	4	3	3	3	3	3	3	3	
21	5	5	4	4	4	4	4	4	4	3	3	3	3	
22	5	5	5	5	5	4	4	4	4	4	4	4	3	
23	6	6	5	5	5	5	5	4	4	4	4	4	4	
24	6	6	6	6	5	5	5	5	5	5	4	4	4	
25	7	6	6	6	6	6	5	5	5	5	5	5	4	
26	7	7	7	7	6	6	6	6	6	5	5	5	5	
27	8	8	7	7	7	7	6	6	6	6	6	5	5	
28	8	8	8	8	7	7	7	7	6	6	6	6	6	
29	9	9	8	8	8	8	7	7	7	7	6	6	6	
30	10	9	9	9	8	8	8	8	7	7	7	7	6	
31	10	10	10	9	9	9	8	8	8	8	7	7	7	
32	11	11	10	10	10	9	9	9	8	8	8	7	7	
33	12	11	11	10	10	10	10	9	9	9	8	8	8	
34	12	12	12	11	11	10	10	10	9	9	9	8	8	
35	13	13	12	12	11	11	11	10	10	10	9	9	9	
36	14	13	13	13	12	12	11	11	11	10	10	9	9	
37	15	14	14	13	13	12	12	12	11	11	10	10	10	
38	16	15	14	14	14	13	13	12	12	11	11	11	10	
39	16	16	15	15	14	14	13	13	12	12	12	11	11	
40	17	17	16	16	15	14	14	13	13	13	12	12	11	
41	18	17	17	16	16	15	15	14	14	13	13	12	12	
42	19	18	18	17	17	16	15	15	14	14	13	13	12	
43	20	19	19	18	17	17	16	16	15	15	14	14	13	
44	21	20	19	19	18	17	17	16	16	15	15	14	14	
45	22	21	20	20	19	18	18	17	16	16	15	15	14	
46	23	22	21	21	20	19	18	18	17	17	16	15	15	
47	24	23	22	21	21	20	19	19	18	17	17	16	16	
48	25	24	23	22	22	21	20	19	19	18	17	17	16	
49	26	25	24	23	22	22	21	20	20	19	18	18	17	
50	27	26	25	24	23	23	22	21	20	20	19	18	18	
51	28	27	26	25	24	24	23	22	21	20	20	19	18	
52	29	28	27	26	25	24	24	23	22	21	21	20	19	
53	30	29	28	27	26	25	25	24	23	22	21	21	20	
54	31	30	29	28	27	26	25	25	24	23	22	21	21	
55	33	31	30	29	28	27	26	25	25	24	23	22	21	
56	34	33	31	30	29	28	27	26	26	25	24	23	22	
57	35	34	33	31	30	29	28	27	26	26	25	24	23	
58	36	35	34	33	31	30	29	28	27	26	26	25	24	
59	38	36	35	34	33	31	30	29	28	27	26	25	25	
60	39	37	36	35	34	33	31	30	29	28	27	26	25	
61	40	39	37	36	35	34	32	31	30	29	28	27	26	
62	41	40	39	37	36	35	34	32	31	30	29	28	27	

FOR COMPUTING THE FINAL EFFECT OF PARALLAX ON THE DISTANCE
BETWEEN THE MOON AND THE SUN, OR A FIXED STAR.

Argument. APPARENT DISTANCE.

Arg. Parallax in Altitude or Distance	Add the Difference of the two Numbers taken out of this Table, if the Apparent Distance is less than 90°, and Subtract it if above.														
	52°	53°	54°	55°	56°	57°	58°	59°	60° 120	65° 115	70° 110	75° 105	80° 100	85° 95	90° 90°
Min.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
11	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
12	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
13	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
14	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
15	2	2	2	2	2	2	2	2	2	1	1	1	0	0	0
16	2	2	2	2	2	2	2	2	2	1	1	1	0	0	0
17	2	2	2	2	2	2	2	2	2	1	1	1	0	0	0
18	2	2	2	2	2	2	2	2	2	1	1	1	0	0	0
19	2	2	2	2	2	2	2	2	2	1	1	1	0	0	0
20	3	3	3	3	2	2	2	2	2	2	1	1	1	0	0
21	3	3	3	3	3	2	2	2	2	2	1	1	1	0	0
22	3	3	3	3	3	3	3	3	2	2	2	1	1	0	0
23	4	3	3	3	3	3	3	3	3	2	2	1	1	0	0
24	4	4	4	4	3	3	3	3	3	2	2	1	1	0	0
25	4	4	4	4	4	4	3	3	3	3	2	1	1	0	0
26	5	4	4	4	4	4	4	4	3	3	2	2	1	1	0
27	5	5	5	4	4	4	4	4	4	3	2	2	1	1	0
28	5	5	5	5	5	4	4	4	4	3	2	2	1	1	0
29	6	6	5	5	5	5	5	4	4	3	3	2	1	1	0
30	6	6	6	5	5	5	5	5	5	4	3	2	1	1	0
31	7	6	6	6	6	5	5	5	5	4	3	2	1	1	0
32	7	7	6	6	6	6	6	5	5	4	3	2	2	1	0
33	7	7	7	7	6	6	6	6	5	4	3	3	2	1	0
34	8	8	7	7	7	7	6	6	6	5	4	3	2	1	0
35	8	8	8	7	7	7	7	6	6	5	4	3	2	1	0
36	9	9	8	8	8	7	7	7	7	5	4	3	2	1	0
37	9	9	9	8	8	8	7	7	7	6	4	3	2	1	0
38	10	9	9	9	8	8	8	8	7	6	5	3	2	1	0
39	10	10	10	9	9	9	8	8	8	6	5	4	2	1	0
40	11	11	10	10	9	9	9	8	8	7	5	4	2	1	0
41	11	11	11	10	10	10	9	9	8	7	5	4	3	1	0
42	12	12	11	11	10	10	10	9	9	7	6	4	3	1	0
43	13	12	12	11	11	10	10	10	9	8	6	4	3	1	0
44	13	13	12	12	11	11	10	10	10	8	6	5	3	1	0
45	14	13	13	12	12	11	11	11	10	8	6	5	3	2	0
46	14	14	13	13	12	12	12	11	11	9	7	5	3	2	0
47	15	15	14	13	13	13	12	12	11	9	7	5	3	2	0
48	16	15	15	14	14	13	13	12	12	9	7	5	4	2	0
49	16	16	15	15	14	14	13	13	12	10	8	6	4	2	0
50	17	16	16	15	15	14	14	13	13	10	8	6	4	2	0
51	18	17	16	16	15	15	14	14	13	11	8	6	4	2	0
52	18	18	17	17	16	15	15	14	14	11	9	6	4	2	0
53	19	18	18	17	17	16	15	15	14	11	9	7	4	2	0
54	20	19	18	18	17	16	15	15	15	12	9	7	4	2	0
55	21	20	19	18	18	17	16	16	15	12	10	7	5	2	0
56	21	21	20	19	18	18	17	16	16	13	10	7	5	2	0
57	22	21	21	20	19	18	18	17	16	13	10	8	5	2	0
58	23	22	21	21	20	19	18	18	17	14	11	8	5	3	0
59	24	23	22	21	20	19	18	18	17	14	11	8	5	3	0
60	25	24	23	22	21	20	20	19	18	15	11	8	6	3	0
61	25	24	24	23	22	21	20	20	19	15	12	9	6	3	0
62	26	25	24	23	23	22	21	20	19	16	12	9	6	3	0

TABLE XLIII.

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AMPLITUDES OF A CELESTIAL BODY, RECKONED FROM THE MERIDIAN.

Arg. Lat.	Argument. DECLINATION.										
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
0°	90° 0'	89° 0'	88° 0'	87° 0'	86° 0'	85° 0'	84° 0'	83° 0'	82° 0'	81° 0'	80° 0'
1	90 0	89 0	88 0	87 0	86 0	85 0	84 0	83 0	82 0	81 0	80 0
2	90 0	89 0	88 0	87 0	86 0	85 0	84 0	83 0	82 0	81 0	80 0
3	90 0	89 0	88 0	87 0	86 0	85 0	84 0	82 59	81 59	80 59	79 59
4	90 0	89 0	88 0	87 0	86 0	85 0	83 59	82 59	81 59	80 59	79 59
5	90 0	89 0	88 0	87 0	85 59	84 59	83 59	82 58	81 58	80 58	79 58
6	90 0	89 0	88 0	86 59	85 59	84 59	83 53	82 58	81 58	80 57	79 57
7	90 0	89 0	87 59	86 59	85 58	84 58	83 58	82 57	81 57	80 56	79 56
8	90 0	89 0	87 59	86 59	85 58	84 57	83 57	82 56	81 56	80 55	79 55
9	90 0	89 0	87 59	86 58	85 57	84 57	83 56	82 55	81 54	80 53	79 53
10	90 0	88 59	87 58	86 57	85 56	84 55	83 54	82 54	81 52	80 51	79 50
11	90 0	88 59	87 58	86 57	85 56	84 55	83 54	82 53	81 51	80 50	79 49
12	90 0	88 59	87 57	86 56	85 55	84 53	83 52	82 51	81 49	80 48	79 47
13	90 0	88 58	87 57	86 55	85 54	84 52	83 50	82 49	81 48	80 46	79 45
14	90 0	88 58	87 56	86 55	85 53	84 51	83 49	82 47	81 45	80 43	79 42
15	90 0	88 58	87 56	86 54	85 52	84 49	83 47	82 45	81 43	80 41	79 39
16	90 0	88 58	87 55	86 53	85 50	84 48	83 45	82 43	81 41	80 38	79 36
17	90 0	88 58	87 55	86 52	85 49	84 47	83 44	82 41	81 38	80 35	79 33
18	90 0	88 57	87 54	86 51	85 48	84 45	83 41	82 38	81 35	80 32	79 30
19	90 0	88 57	87 53	86 50	85 47	84 43	83 39	82 36	81 32	80 29	79 26
20	90 0	88 56	87 52	86 48	85 45	84 41	83 37	82 33	81 29	80 25	79 21
21	90 0	88 56	87 52	86 47	85 43	84 39	83 34	82 30	81 26	80 21	79 17
22	90 0	88 56	87 51	86 46	85 41	84 37	83 32	82 27	81 22	80 17	79 12
23	90 0	88 55	87 50	86 45	85 39	84 34	83 29	82 24	81 18	80 13	79 8
24	90 0	88 55	87 49	86 43	85 37	84 32	83 26	82 20	81 14	80 9	79 3
25	90 0	88 54	87 48	86 42	85 35	84 29	83 23	82 16	81 10	80 4	78 58
26	90 0	88 53	87 47	86 40	85 33	84 27	83 19	82 12	81 6	79 59	78 52
27	90 0	88 53	87 46	86 38	85 31	84 24	83 16	82 8	81 1	79 54	78 46
28	90 0	88 52	87 44	86 36	85 28	84 20	83 12	82 4	80 56	79 48	78 40
29	90 0	88 52	87 43	86 34	85 26	84 17	83 8	82 0	80 51	79 42	78 33
30	90 0	88 51	87 42	86 32	85 23	84 14	83 4	81 55	80 45	79 36	78 27
31	90 0	88 50	87 40	86 30	85 20	84 10	83 0	81 50	80 39	79 29	78 19
32	90 0	88 50	87 39	86 28	85 17	84 6	82 55	81 44	80 33	79 22	78 11
33	90 0	88 49	87 37	86 25	85 14	84 2	82 50	81 39	80 27	79 15	78 3
34	90 0	88 48	87 35	86 23	85 10	83 58	82 45	81 33	80 20	79 8	77 55
35	90 0	88 47	87 33	86 20	85 7	83 54	82 40	81 27	80 13	79 0	77 46
36	90 0	88 46	87 32	86 17	85 3	83 49	82 35	81 21	80 6	78 51	77 37
37	90 0	88 45	87 30	86 15	85 0	83 45	82 29	81 14	79 58	78 43	77 27
38	90 0	88 44	87 28	86 12	84 56	83 40	82 23	81 6	79 49	78 33	77 16
39	90 0	88 43	87 26	86 9	84 52	83 34	82 17	80 59	79 41	78 23	77 5
40	90 0	88 42	87 24	86 5	84 47	83 28	82 10	80 51	79 32	78 13	76 54
41	90 0	88 41	87 21	86 2	84 42	83 22	82 3	80 43	79 23	78 2	76 42
42	90 0	88 39	87 19	85 58	84 37	83 16	81 55	80 34	79 13	77 51	76 29
43	90 0	88 38	87 16	85 54	84 32	83 9	81 47	80 25	79 2	77 39	76 16
44	90 0	88 37	87 13	85 50	84 26	83 2	81 39	80 15	78 51	77 26	76 2
45	90 0	88 35	87 10	85 45	84 20	82 55	81 30	80 5	78 39	77 13	75 47
46	90 0	88 34	87 7	85 41	84 14	82 48	81 21	79 54	78 27	76 59	75 31
47	90 0	88 32	87 4	85 36	84 8	82 39	81 11	79 42	78 13	76 44	75 15
48	90 0	88 31	87 1	85 31	84 1	82 31	81 1	79 30	77 59	76 29	74 57
49	90 0	88 29	86 57	85 25	83 54	82 22	80 50	79 18	77 45	76 12	74 39
50	90 0	88 27	86 54	85 20	85 46	82 12	80 39	79 4	77 30	75 55	74 20
51	90 0	88 25	86 50	85 14	83 38	82 2	80 26	78 50	77 13	75 36	73 59
52	90 0	88 23	86 45	85 8	83 30	81 52	80 14	78 35	76 56	75 17	73 37
53	90 0	88 20	86 40	85 1	83 20	81 40	80 0	78 19	76 38	74 56	73 14
54	90 0	88 18	86 36	84 53	83 11	81 28	79 45	78 2	76 18	74 34	72 49
55	90 0	88 15	86 31	84 46	83 1	81 16	79 30	77 44	75 57	74 10	72 23
56	90 0	88 13	86 26	84 38	82 50	81 2	79 14	77 25	75 35	73 45	71 54
57	90 0	88 10	86 20	84 29	82 38	80 47	78 56	77 4	75 12	73 18	71 24
58	90 0	88 7	86 14	84 20	82 26	80 32	78 38	76 42	74 47	72 50	70 52
59	90 0	88 4	86 7	84 10	82 13	80 15	78 17	76 19	74 19	72 19	70 18
60	90 0	88 0	86 0	84 0	81 59	79 58	77 56	75 54	73 50	71 46	69 41

AMPLITUDES OF A CELESTIAL BODY, RECKONED FROM THE MERIDIAN.

Arg. Lat.	Argument. DECLINATION.										
	11°	12°	13°	14°	15°	15°30'	16° 0'	16°30'	17° 0'	17°30'	18° 0'
0°	79° 0'	78° 0'	77° 0'	76° 0'	75° 0'	74°30'	74° 0'	73°30'	73° 0'	72°30'	72° 0'
1	79 0	78 0	77 0	76 0	75 0	74 30	74 0	73 30	73 0	72 30	72 0
2	79 0	78 0	76 59	75 59	74 59	74 29	73 59	73 29	72 59	72 29	71 59
3	78 59	77 59	76 59	75 59	74 59	74 29	73 59	73 29	72 58	72 28	71 58
4	78 58	77 58	76 58	75 58	74 58	74 28	73 58	73 28	72 57	72 27	71 57
5	78 57	77 57	76 57	75 57	74 56	74 26	73 56	73 26	72 56	72 26	71 56
6	78 56	77 56	76 55	75 55	74 55	74 25	73 55	73 25	72 54	72 24	71 54
7	78 55	77 54	76 54	75 54	74 53	74 23	73 53	73 22	72 52	72 22	71 52
8	78 53	77 53	76 52	75 52	74 51	74 21	73 50	73 20	72 50	72 20	71 49
9	78 52	77 51	76 50	75 50	74 49	74 18	73 48	73 17	72 47	72 17	71 46
10	78 49	77 49	76 48	75 47	74 46	74 16	73 45	73 15	72 44	72 14	71 43
11	78 47	77 47	76 45	75 44	74 43	74 12	73 42	73 11	72 40	72 10	71 39
12	78 45	77 44	76 42	75 41	74 39	74 9	73 38	73 8	72 37	72 6	71 35
13	78 43	77 41	76 39	75 38	74 36	74 5	73 34	73 3	72 32	72 1	71 30
14	78 40	77 38	76 36	75 34	74 32	74 1	73 30	72 59	72 28	71 57	71 26
15	78 37	77 35	76 32	75 30	74 28	73 56	73 25	72 54	72 23	71 52	71 20
16	78 33	77 31	76 28	75 26	74 23	73 52	73 20	72 49	72 17	71 46	71 15
17	78 30	77 27	76 24	75 21	74 18	73 46	73 15	72 43	72 12	71 40	71 9
18	78 26	77 22	76 19	75 16	74 13	73 41	73 9	72 38	72 6	71 34	71 2
19	78 22	77 18	76 14	75 10	74 7	73 35	73 3	72 31	71 59	71 27	70 55
20	78 17	77 13	76 9	75 5	74 1	73 29	72 56	72 24	71 52	71 20	70 48
21	78 12	77 8	76 3	74 59	73 54	73 22	72 49	72 17	71 45	71 13	70 40
22	78 7	77 2	75 57	74 52	73 47	73 15	72 42	72 10	71 37	71 5	70 32
23	78 2	76 57	75 51	74 45	73 40	73 7	72 34	72 2	71 29	70 56	70 23
24	77 57	76 51	75 44	74 38	73 32	72 59	72 26	71 53	71 20	70 47	70 14
25	77 51	76 44	75 37	74 31	73 24	72 51	72 17	71 44	71 11	70 37	70 4
26	77 45	76 38	75 30	74 23	73 15	72 42	72 8	71 35	71 1	70 27	69 53
27	77 38	76 30	75 22	74 15	73 6	72 33	71 59	71 25	70 51	70 17	69 42
28	77 31	76 23	75 14	74 6	72 57	72 24	71 49	71 15	70 40	70 6	69 31
29	77 24	76 15	75 6	73 57	72 47	72 13	71 38	71 3	70 28	69 53	69 18
30	77 16	76 7	74 57	73 47	72 37	72 2	71 26	70 51	70 16	69 41	69 6
31	77 8	75 58	74 47	73 36	72 25	71 50	71 15	70 39	70 3	69 28	68 52
32	77 0	75 49	74 37	73 26	72 14	71 38	71 2	70 26	69 50	69 14	68 38
33	76 51	75 39	74 26	73 14	72 1	71 25	70 49	70 12	69 36	68 59	68 23
34	76 42	75 28	74 15	73 2	71 48	71 12	70 35	69 58	69 22	68 44	68 7
35	76 32	75 18	74 4	72 40	71 35	70 58	70 20	69 43	69 5	68 28	67 50
36	76 21	75 6	73 51	72 36	71 20	70 43	70 5	69 27	68 49	68 11	67 33
37	76 11	74 54	73 38	72 22	71 5	70 27	69 49	69 10	68 32	67 53	67 14
38	75 59	74 42	73 25	72 7	70 50	70 11	69 22	68 52	68 13	67 34	66 55
39	75 47	74 29	73 10	71 52	70 33	69 53	69 14	68 34	67 54	67 14	66 34
40	75 35	74 15	72 55	71 35	70 15	69 35	68 55	68 14	67 34	66 53	66 13
41	75 21	74 0	72 39	71 18	69 57	69 16	68 35	67 54	67 12	66 31	65 50
42	75 7	73 45	72 23	71 0	69 37	68 55	68 14	67 32	66 50	66 8	65 26
43	74 53	73 29	72 5	70 41	69 17	68 37	67 52	67 9	66 26	65 43	65 0
44	74 37	73 12	71 47	70 21	68 55	68 11	67 28	66 45	66 1	65 17	64 34
45	74 21	72 54	71 27	70 0	68 32	67 48	67 3	66 19	65 35	64 50	64 5
46	74 3	72 35	71 6	69 37	68 7	67 22	66 37	65 52	65 7	64 21	63 35
47	73 45	72 15	70 44	69 23	67 42	66 56	66 10	65 23	64 37	63 50	63 3
48	73 26	71 54	70 21	68 48	67 15	66 27	65 40	64 53	64 6	63 18	62 29
49	73 5	71 32	69 57	68 22	66 46	65 57	65 9	64 21	63 32	62 43	61 54
50	72 44	71 8	69 31	67 53	66 15	65 26	64 36	63 47	62 57	62 7	61 16
51	72 21	70 42	69 3	67 23	65 42	64 52	64 1	63 11	62 19	61 27	60 35
52	71 57	70 16	68 34	66 51	65 8	64 16	63 24	62 32	61 39	60 46	59 53
53	71 31	69 47	68 3	66 17	64 32	63 38	62 44	61 50	60 56	60 1	59 6
54	71 3	69 17	67 30	65 42	63 53	62 57	62 2	61 6	60 10	59 14	58 17
55	70 34	68 45	66 54	65 3	63 10	62 14	61 17	60 19	59 21	58 23	57 24
56	70 3	68 10	66 17	64 22	62 26	61 27	60 28	59 28	58 28	57 27	56 27
57	69 29	67 34	65 37	63 38	61 38	60 37	59 36	58 34	57 32	56 30	55 26
58	68 53	66 54	64 53	62 50	60 46	59 43	58 40	57 35	56 31	55 25	54 20
59	68 16	66 11	64 6	61 59	59 50	58 44	57 39	56 32	55 25	54 17	53 8
60	67 34	65 26	63 16	61 4	58 56	57 42	56 33	55 23	54 13	53 2	51 50

AMPLITUDES OF A CELESTIAL BODY, RECKONED FROM THE MERIDIAN.

Arg. Lat.	Argument. DECLINATION.											
	18° 30'	19° 0'	19° 30'	20° 0'	20° 30'	21° 0'	21° 30'	22° 0'	22° 30'	23° 0'	23° 30'	24° 0'
0°	71° 30'	71° 0'	70° 30'	70° 0'	69° 30'	69° 0'	68° 30'	68° 0'	67° 30'	67° 0'	66° 30'	66° 0'
1	71 30	71 0	70 30	70 0	69 30	69 0	68 30	68 0	67 30	67 0	66 30	66 0
2	71 29	70 59	70 29	69 59	69 29	68 59	68 29	67 59	67 29	66 59	66 29	66 0
3	71 28	70 58	70 28	69 58	69 28	68 58	68 28	67 58	67 28	66 58	66 28	66 0
4	71 27	70 57	70 27	69 57	69 27	68 57	68 27	67 57	67 27	66 57	66 27	66 0
5	71 26	70 55	70 25	69 55	69 25	68 55	68 25	67 55	67 25	66 55	66 25	66 0
6	71 24	70 53	70 23	69 53	69 23	68 53	68 23	67 52	67 22	66 52	66 22	66 0
7	71 21	70 51	70 21	69 51	69 20	68 50	68 20	67 49	67 19	66 49	66 21	66 0
8	71 19	70 48	70 18	69 48	69 17	68 47	68 17	67 46	67 16	66 46	66 17	66 0
9	71 16	70 45	70 15	69 44	69 14	68 43	68 13	67 43	67 12	66 42	66 13	66 0
10	71 13	70 42	70 12	69 41	69 10	68 40	68 9	67 39	67 8	66 37	66 9	66 0
11	71 9	70 38	70 7	69 36	69 6	68 35	68 5	67 34	67 3	66 32	66 4	66 0
12	71 5	70 34	70 3	69 32	69 1	68 30	68 0	67 29	66 58	66 27	65 59	65 0
13	70 0	70 29	69 58	69 27	68 56	68 25	67 54	67 23	66 52	66 21	65 53	65 0
14	70 55	70 24	69 53	69 22	68 51	68 19	67 48	67 18	66 46	66 15	65 46	65 0
15	70 49	70 18	69 47	69 16	68 45	68 13	67 42	67 11	66 40	66 8	65 39	65 0
16	70 44	70 12	69 41	69 9	68 38	68 7	67 36	67 4	66 33	66 1	65 32	65 0
17	70 37	70 6	69 34	69 2	68 31	68 0	67 28	66 56	66 25	65 53	65 24	65 0
18	70 31	69 59	69 27	68 55	68 24	67 52	67 20	66 48	66 17	65 45	65 15	65 0
19	70 23	69 52	69 20	68 47	68 16	67 44	67 12	66 39	66 8	65 36	65 6	65 0
20	70 16	69 44	69 12	68 39	68 7	67 35	67 3	66 30	65 58	65 26	64 56	64 0
21	70 8	69 36	69 3	68 30	67 58	67 26	66 53	66 20	65 48	65 15	64 45	64 0
22	69 59	69 27	68 54	68 21	67 48	67 16	66 43	66 10	65 37	65 4	64 34	64 0
23	69 50	69 17	68 44	68 11	67 38	67 5	66 32	65 59	65 26	64 53	64 22	64 0
24	69 41	69 7	68 34	68 1	67 28	66 54	66 21	65 47	65 14	64 41	64 9	64 0
25	69 30	68 57	68 23	67 50	67 16	66 42	66 9	65 36	65 1	64 28	63 56	63 0
26	69 20	68 46	68 12	67 38	67 4	66 30	65 56	65 22	64 48	64 14	63 42	63 0
27	69 8	68 34	68 0	67 26	66 51	66 17	65 43	65 8	64 34	63 59	63 27	63 0
28	68 57	68 22	67 48	67 13	66 38	66 3	65 29	64 54	64 19	63 44	63 11	63 0
29	68 44	68 9	67 33	66 59	66 24	65 49	65 14	64 38	64 3	63 28	62 55	62 0
30	68 30	67 55	67 20	66 44	66 9	65 33	64 58	64 21	63 47	63 11	62 37	62 0
31	68 16	67 40	67 5	66 29	65 53	65 17	64 41	64 5	63 29	62 53	62 19	62 0
32	68 2	67 25	66 49	66 13	65 36	65 0	64 24	63 47	63 10	62 34	62 0	62 0
33	67 46	67 9	66 33	65 56	65 19	64 42	64 5	63 28	62 51	62 14	61 39	61 0
34	67 30	66 53	66 15	65 38	65 1	64 23	63 46	63 8	62 31	61 53	61 18	61 0
35	67 13	66 35	65 57	65 19	64 41	64 3	63 25	62 47	62 9	61 31	60 55	60 0
36	66 54	66 16	65 38	64 59	64 21	63 42	63 4	62 25	61 46	61 7	60 30	60 0
37	66 36	65 57	65 18	64 39	64 0	63 20	62 41	62 2	61 22	60 43	60 5	60 0
38	66 15	65 36	64 56	64 17	63 37	62 57	62 17	61 37	60 57	60 16	59 39	59 0
39	65 54	65 14	64 34	63 53	63 13	62 32	61 52	61 11	60 30	59 49	59 11	59 0
40	65 32	64 51	64 10	63 29	62 48	62 6	61 25	60 43	60 2	59 20	58 41	58 0
41	65 8	64 27	63 45	63 3	62 21	61 39	60 57	60 14	59 32	58 49	58 9	58 0
42	64 43	64 1	63 18	62 36	61 53	61 10	60 27	59 44	59 0	58 17	57 36	57 0
43	64 17	63 34	62 51	62 7	61 23	60 40	59 55	59 11	58 27	57 42	57 1	57 0
44	63 49	63 5	62 21	61 36	60 52	60 7	59 22	58 37	57 51	57 6	56 23	56 0
45	63 20	62 35	61 50	61 4	60 19	59 33	58 47	58 1	57 14	56 27	55 43	55 0
46	62 49	62 3	61 17	60 30	59 44	58 57	58 9	57 22	56 34	55 46	55 1	55 0
47	62 16	61 29	60 42	59 54	59 6	58 18	57 30	56 41	55 52	55 3	54 16	54 0
48	61 49	60 53	60 4	59 16	58 26	57 37	56 47	55 57	55 7	54 16	53 29	53 0
49	61 5	60 15	59 24	58 35	57 44	56 54	56 3	55 11	54 19	53 27	52 38	52 0
50	60 25	59 34	58 42	57 51	56 59	56 7	55 14	54 22	53 28	52 34	51 43	51 0
51	59 43	59 51	57 58	57 5	56 11	55 17	54 23	53 28	52 32	51 37	50 45	50 0
52	58 59	58 4	57 10	56 15	55 20	54 24	53 28	52 31	51 34	50 36	49 42	49 0
53	58 11	57 15	56 19	55 22	54 24	53 27	52 29	51 30	50 30	49 31	48 34	48 0
54	57 20	56 22	55 24	54 25	53 26	52 26	51 26	50 24	49 23	48 20	47 21	47 0
55	56 25	55 25	54 25	53 24	52 22	51 20	50 17	49 13	48 8	47 4	46 2	46 0
56	55 26	54 24	53 21	52 18	51 13	50 9	49 3	47 56	46 49	45 40	44 36	44 0
57	54 22	53 18	52 12	51 6	49 59	48 51	47 42	46 33	45 22	44 9	43 1	43 0
58	53 12	52 6	50 57	49 48	48 38	47 27	46 14	45 1	43 46	42 30	41 17	41 0
59	51 58	50 48	49 36	48 23	47 10	45 54	44 38	43 20	42 1	40 39	39 22	39 0
60	50 36	49 23	48 7	46 50	45 32	44 13	42 52	41 28	40 3	38 36	37 13	37 0

TABLE XLIV.

TO FIND THE TIME OF RISING AND SETTING OF A CELESTIAL OBJECT.

Arg. Lat.	Argument. DECLINATION.										
	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
0°	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'
1	6 0	6 0	6 0	6 0	6 0	6 0	6 0	6 0	6 0	6 1	6 1
2	6 0	6 0	6 0	6 0	6 0	6 0	6 1	6 1	6 1	6 1	6 1
3	6 0	6 0	6 0	6 0	6 1	6 1	6 1	6 1	6 2	6 2	6 2
4	6 0	6 0	6 0	6 1	6 1	6 1	6 2	6 2	6 2	6 3	6 3
5	6 0	6 0	6 1	6 1	6 1	6 2	6 2	6 2	6 3	6 3	6 4
6	6 0	6 0	6 1	6 1	6 2	6 2	6 3	6 3	6 3	6 4	6 4
7	6 0	6 0	5 1	6 1	6 2	6 2	6 3	6 3	6 4	6 4	6 5
8	6 0	6 0	6 1	6 2	6 2	6 3	6 3	6 4	6 4	6 5	6 6
9	6 0	6 1	6 1	6 2	6 2	6 3	6 4	6 4	6 5	6 6	6 6
10	6 0	6 1	6 1	6 2	6 3	6 4	6 4	6 5	6 6	6 6	6 7
11	6 0	6 1	6 2	6 2	6 3	6 4	6 5	6 5	6 6	6 7	6 8
12	6 0	6 1	6 2	6 3	6 3	6 4	6 5	6 6	6 7	6 8	6 9
13	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 6	6 7	6 8	6 9
14	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 7	6 8	6 9	6 10
15	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 7	6 8	6 9	6 10
16	6 0	6 1	6 2	6 3	6 5	6 6	6 7	6 8	6 9	6 10	6 11
17	6 0	6 1	6 2	6 4	6 5	6 6	6 7	6 9	6 10	6 11	6 12
18	6 0	6 1	6 2	6 4	6 5	6 6	6 8	6 9	6 10	6 12	6 13
19	6 0	6 1	6 3	6 4	6 5	6 7	6 8	6 10	6 11	6 13	6 14
20	6 0	6 1	6 3	6 4	6 6	6 7	6 9	6 10	6 12	6 13	6 15
21	6 0	6 1	6 3	6 5	6 6	6 8	6 9	6 11	6 12	6 14	6 16
22	6 0	6 2	6 3	6 5	6 6	6 8	6 10	6 11	6 13	6 15	6 16
23	6 0	6 2	6 3	6 5	6 7	6 9	6 10	6 12	6 14	6 15	6 17
24	6 0	6 2	6 3	6 5	6 7	6 9	6 11	6 13	6 14	6 16	6 18
25	6 0	6 2	6 4	6 6	6 7	6 9	6 11	6 13	6 15	6 17	6 19
26	6 0	6 2	6 4	6 6	6 8	6 10	6 12	6 14	6 16	6 18	6 20
27	6 0	6 2	6 4	6 6	6 8	6 10	6 12	6 14	6 16	6 19	6 21
28	6 0	6 2	6 4	6 6	6 9	6 11	6 13	6 15	6 17	6 19	6 22
29	6 0	6 2	6 4	6 7	6 9	6 11	6 13	6 16	6 18	6 20	6 23
30	6 0	6 2	6 5	6 7	6 9	6 12	6 14	6 16	6 19	6 21	6 23
31	6 0	6 2	6 5	6 7	6 10	6 12	6 15	6 17	6 19	6 22	6 24
32	6 0	6 2	6 5	6 8	6 10	6 13	6 15	6 18	6 20	6 23	6 25
33	6 0	6 3	6 5	6 8	6 10	6 13	6 16	6 18	6 21	6 24	6 26
34	6 0	6 3	6 5	6 8	6 11	6 14	6 16	6 19	6 22	6 25	6 27
35	6 0	6 3	6 6	6 8	6 11	6 14	6 17	6 20	6 23	6 25	6 28
36	6 0	6 3	6 6	6 9	6 12	6 15	6 18	6 20	6 23	6 26	6 29
37	6 0	6 3	6 6	6 9	6 12	6 15	6 18	6 21	6 24	6 27	6 31
38	6 0	6 3	6 6	6 9	6 13	6 16	6 19	6 22	6 25	6 28	6 32
39	6 0	6 3	6 6	6 10	6 13	6 16	6 20	6 23	6 26	6 29	6 33
40	6 0	6 3	6 7	6 10	6 13	6 17	6 21	6 24	6 27	6 31	6 34
41	6 0	6 3	6 7	6 10	6 14	6 17	6 21	6 25	6 28	6 32	6 35
42	6 0	6 4	6 7	6 11	6 14	6 18	6 22	6 25	6 29	6 33	6 37
43	6 0	6 4	6 7	6 11	6 15	6 19	6 22	6 26	6 30	6 34	6 38
44	6 0	6 4	6 8	6 12	6 15	6 19	6 23	6 27	6 31	6 35	6 39
45	6 0	6 4	6 8	6 12	6 16	6 20	6 24	6 28	6 32	6 36	6 41
46	6 0	6 4	6 8	6 12	6 17	6 21	6 25	6 29	6 33	6 38	6 42
47	6 0	6 4	6 9	6 13	6 17	6 22	6 26	6 30	6 35	6 39	6 43
48	6 0	6 4	6 9	6 13	6 18	6 22	6 27	6 31	6 36	6 41	6 45
49	6 0	6 5	6 9	6 14	6 18	6 23	6 28	6 32	6 37	6 42	6 47
50	6 0	6 5	6 10	6 14	6 19	6 24	6 29	6 34	6 39	6 44	6 49
51	6 0	6 5	6 10	6 15	6 20	6 25	6 30	6 35	6 40	6 45	6 50
52	6 0	6 5	6 10	6 15	6 21	6 26	6 31	6 36	6 41	6 47	6 52
53	6 0	6 5	6 11	6 16	6 21	6 27	6 32	6 38	6 43	6 49	6 54
54	6 0	6 6	6 11	6 17	6 22	6 28	6 33	6 39	6 45	6 50	6 56
55	6 0	6 6	6 11	6 17	6 23	6 29	6 35	6 40	6 46	6 52	6 58
56	6 0	6 6	6 12	6 18	6 24	6 30	6 36	6 42	6 48	6 54	7 1
57	6 0	6 6	6 12	6 19	6 25	6 31	6 37	6 44	6 50	6 56	7 3
58	6 0	6 6	6 13	6 19	6 26	6 32	6 39	6 45	6 52	6 59	7 6
59	6 0	6 7	6 13	6 20	6 27	6 33	6 40	6 47	6 54	7 1	7 8
60	6 0	6 7	6 14	6 21	6 28	6 35	6 42	6 49	6 56	7 4	7 11

TO FIND THE TIME OF RISING AND SETTING OF A CELESTIAL OBJECT.

Arg. Lat.	Argument. DECLINATION.										
	11°	12°	13°	14°	15°	15°30'	16° 0'	16°30'	17° 0'	17°30'	18° 0'
0°	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'	6h 0'
1	6 1	6 1	6 1	6 1	6 1	6 1	6 1	6 1	6 1	6 1	6 1
2	6 1	6 2	6 2	6 2	6 2	6 2	6 2	6 2	6 2	6 3	6 3
3	6 2	6 2	6 3	6 3	6 3	6 3	6 3	6 4	6 4	6 4	6 4
4	6 3	6 3	6 4	6 4	6 4	6 4	6 5	6 5	6 5	6 5	6 5
5	6 4	6 4	6 5	6 5	6 5	6 5	6 6	6 6	6 6	6 6	6 7
6	6 5	6 5	6 6	6 6	6 6	6 7	6 7	6 7	6 7	6 8	6 8
7	6 5	6 6	6 6	6 7	6 8	6 8	6 8	6 8	6 9	6 9	6 9
8	6 6	6 7	6 7	6 8	6 9	6 9	6 9	6 9	6 10	6 10	6 10
9	6 7	6 8	6 8	6 9	6 10	6 10	6 10	6 11	6 11	6 12	6 12
10	6 8	6 9	6 9	6 10	6 11	6 11	6 12	6 12	6 12	6 13	6 13
11	6 9	6 9	6 10	6 11	6 12	6 12	6 13	6 13	6 14	6 14	6 14
12	6 9	6 10	6 11	6 12	6 13	6 13	6 14	6 14	6 15	6 15	6 16
13	6 10	6 11	6 12	6 13	6 14	6 15	6 15	6 16	6 16	6 17	6 17
14	6 11	6 12	6 13	6 14	6 15	6 16	6 16	6 17	6 17	6 18	6 19
15	6 12	6 13	6 14	6 15	6 16	6 17	6 18	6 18	6 19	6 19	6 20
16	6 13	6 14	6 15	6 16	6 18	6 18	6 19	6 19	6 20	6 21	6 21
17	6 13	6 15	6 16	6 17	6 19	6 19	6 20	6 21	6 21	6 22	6 23
18	6 14	6 16	6 17	6 19	6 20	6 21	6 21	6 22	6 22	6 23	6 24
19	6 15	6 17	6 18	6 20	6 21	6 22	6 23	6 23	6 24	6 25	6 26
20	6 16	6 18	6 19	6 21	6 22	6 23	6 24	6 25	6 25	6 26	6 27
21	6 17	6 19	6 20	6 22	6 24	6 24	6 25	6 26	6 27	6 28	6 29
22	6 18	6 20	6 21	6 23	6 25	6 26	6 27	6 27	6 28	6 29	6 30
23	6 19	6 21	6 23	6 24	6 26	6 27	6 28	6 29	6 30	6 31	6 32
24	6 20	6 22	6 24	6 25	6 27	6 28	6 29	6 30	6 31	6 32	6 33
25	6 21	6 23	6 25	6 27	6 29	6 30	6 31	6 32	6 33	6 34	6 35
26	6 22	6 24	6 26	6 28	6 30	6 31	6 32	6 33	6 34	6 35	6 36
27	6 23	6 25	6 27	6 29	6 31	6 32	6 34	6 35	6 36	6 37	6 38
28	6 24	6 26	6 28	6 30	6 33	6 34	6 35	6 36	6 37	6 39	6 40
29	6 25	6 27	6 29	6 32	6 34	6 35	6 37	6 38	6 39	6 40	6 42
30	6 26	6 28	6 31	6 33	6 36	6 37	6 38	6 39	6 41	6 42	6 43
31	6 27	6 29	6 32	6 34	6 37	6 38	6 40	6 41	6 42	6 44	6 45
32	6 28	6 31	6 33	6 36	6 39	6 40	6 41	6 43	6 44	6 46	6 47
33	6 29	6 32	6 34	6 37	6 40	6 41	6 43	6 44	6 46	6 47	6 49
34	6 30	6 33	6 36	6 39	6 42	6 43	6 45	6 46	6 48	6 49	6 51
35	6 31	6 34	6 37	6 40	6 43	6 45	6 46	6 48	6 49	6 51	6 53
36	6 32	6 36	6 39	6 42	6 45	6 46	6 48	6 50	6 51	6 53	6 55
37	6 34	6 37	6 40	6 43	6 47	6 48	6 50	6 52	6 53	6 55	6 57
38	6 35	6 38	6 42	6 45	6 48	6 50	6 52	6 53	6 55	6 57	6 59
39	6 36	6 40	6 43	6 47	6 50	6 52	6 54	6 55	6 57	6 59	7 1
40	6 38	6 41	6 45	6 48	6 52	6 54	6 56	6 58	7 0	7 1	7 3
41	6 39	6 43	6 46	6 50	6 54	6 56	6 58	7 0	7 2	7 4	7 6
42	6 40	6 44	6 48	6 52	6 56	6 58	7 0	7 2	7 4	7 6	7 8
43	6 42	6 46	6 50	6 54	6 58	7 0	7 2	7 4	7 6	7 8	7 11
44	6 43	6 47	6 52	6 56	7 0	7 2	7 4	7 6	7 9	7 11	7 13
45	6 45	6 49	6 53	6 58	7 2	7 4	7 7	7 9	7 11	7 14	7 16
46	6 46	6 51	6 55	7 0	7 4	7 7	7 9	7 11	7 14	7 16	7 19
47	6 48	6 53	6 57	7 2	7 7	7 9	7 12	7 14	7 17	7 19	7 22
48	6 50	6 55	6 59	7 4	7 9	7 12	7 14	7 17	7 19	7 22	7 25
49	6 52	6 57	7 2	7 7	7 13	7 17	7 17	7 20	7 22	7 25	7 28
50	6 54	6 59	7 4	7 9	7 14	7 17	7 20	7 23	7 25	7 28	7 31
51	6 56	7 1	7 6	7 12	7 17	7 20	7 23	7 26	7 29	7 32	7 35
52	6 58	7 3	7 9	7 14	7 20	7 23	7 26	7 29	7 32	7 35	7 38
53	7 0	7 6	7 11	7 17	7 23	7 26	7 29	7 33	7 36	7 39	7 42
54	7 2	7 8	7 14	7 20	7 27	7 30	7 33	7 36	7 40	7 43	7 46
55	7 4	7 10	7 17	7 23	7 30	7 34	7 37	7 40	7 44	7 47	7 51
56	7 7	7 13	7 20	7 27	7 34	7 37	7 41	7 44	7 48	7 51	7 55
57	7 10	7 16	7 23	7 30	7 38	7 41	7 45	7 48	7 52	7 56	8 0
58	7 13	7 20	7 27	7 34	7 42	7 46	7 49	7 53	7 57	8 1	8 5
59	7 16	7 23	7 30	7 38	7 46	7 50	7 54	7 58	8 3	8 7	8 11
60	7 19	7 26	7 34	7 42	7 51	7 55	7 59	8 4	8 8	8 12	8 17

TO FIND THE TIME OF RISING AND SETTING OF A CELESTIAL OBJECT.

Arg. Lat.	Argument. DECLINATION.											
	18° 30'	19° 0'	19° 30'	20° 0'	20° 30'	21° 0'	21° 30'	22° 0'	22° 30'	23° 0'	23° 30'	24° 0'
0°	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'	6 ^h 0'
1	6 1	6 1	6 1	6 1	6 1	6 2	6 2	6 2	6 2	6 2	6 2	6 2
2	6 3	6 3	6 3	6 3	6 3	6 3	6 3	6 3	6 3	6 3	6 3	6 3
3	6 4	6 4	6 4	6 4	6 4	6 5	6 5	6 5	6 5	6 5	6 5	6 5
4	6 5	6 5	6 6	6 6	6 6	6 6	6 6	6 6	6 7	6 7	6 7	6 7
5	6 7	6 7	6 7	6 7	6 7	6 8	6 8	6 8	6 8	6 9	6 9	6 9
6	6 8	6 8	6 9	6 9	6 9	6 9	6 10	6 10	6 10	6 10	6 10	6 10
7	6 9	6 10	6 10	6 10	6 11	6 11	6 11	6 11	6 12	6 12	6 12	6 12
8	6 11	6 11	6 11	6 12	6 12	6 12	6 13	6 13	6 13	6 14	6 14	6 14
9	6 12	6 13	6 13	6 14	6 14	6 14	6 14	6 15	6 15	6 15	6 15	6 16
10	6 14	6 14	6 14	6 15	6 15	6 16	6 16	6 16	6 17	6 17	6 18	6 18
11	6 15	6 15	6 16	6 16	6 17	6 17	6 18	6 18	6 18	6 19	6 19	6 19
12	6 16	6 17	6 17	6 18	6 18	6 19	6 19	6 20	6 20	6 21	6 21	6 21
13	6 18	6 18	6 19	6 19	6 20	6 20	6 21	6 21	6 22	6 22	6 23	6 23
14	6 19	6 20	6 20	6 21	6 21	6 22	6 23	6 23	6 24	6 24	6 25	6 25
15	6 21	6 21	6 22	6 22	6 23	6 24	6 24	6 25	6 25	6 26	6 27	6 27
16	6 22	6 23	6 23	6 24	6 25	6 25	6 26	6 27	6 27	6 28	6 29	6 29
17	6 23	6 24	6 25	6 25	6 26	6 27	6 28	6 28	6 29	6 30	6 31	6 31
18	6 25	6 26	6 26	6 27	6 28	6 29	6 29	6 30	6 31	6 32	6 33	6 33
19	6 26	6 27	6 28	6 28	6 29	6 30	6 31	6 31	6 32	6 33	6 34	6 34
20	6 28	6 29	6 30	6 30	6 31	6 32	6 33	6 33	6 34	6 35	6 36	6 36
21	6 30	6 30	6 31	6 32	6 33	6 34	6 35	6 35	6 36	6 37	6 38	6 38
22	6 31	6 32	6 33	6 34	6 35	6 36	6 37	6 37	6 38	6 39	6 40	6 40
23	6 33	6 34	6 35	6 36	6 37	6 38	6 39	6 39	6 40	6 41	6 42	6 42
24	6 34	6 35	6 36	6 37	6 38	6 39	6 40	6 41	6 42	6 43	6 44	6 44
25	6 36	6 37	6 38	6 39	6 40	6 41	6 42	6 43	6 44	6 45	6 46	6 47
26	6 38	6 39	6 40	6 41	6 42	6 43	6 44	6 45	6 47	6 48	6 49	6 49
27	6 39	6 40	6 42	6 43	6 44	6 45	6 46	6 48	6 49	6 50	6 51	6 51
28	6 41	6 42	6 43	6 45	6 46	6 47	6 48	6 50	6 51	6 52	6 53	6 53
29	6 43	6 44	6 45	6 47	6 48	6 49	6 50	6 52	6 53	6 54	6 56	6 56
30	6 45	6 46	6 47	6 48	6 50	6 51	6 53	6 54	6 55	6 57	6 58	6 58
31	6 46	6 48	6 49	6 50	6 52	6 53	6 55	6 56	6 58	6 59	7 1	7 1
32	6 48	6 50	6 51	6 53	6 54	6 56	6 57	6 58	7 0	7 1	7 3	7 3
33	6 50	6 52	6 53	6 55	6 56	6 58	6 59	7 1	7 2	7 4	7 5	7 5
34	6 52	6 54	6 55	6 57	6 58	7 0	7 2	7 3	7 5	7 6	7 8	7 8
35	6 54	6 56	6 57	6 59	7 1	7 2	7 4	7 6	7 7	7 9	7 11	7 11
36	6 55	6 58	7 0	7 1	7 3	7 5	7 7	7 8	7 10	7 12	7 14	7 14
37	6 58	7 0	7 2	7 4	7 5	7 7	7 9	7 11	7 13	7 15	7 16	7 16
38	7 1	7 2	7 4	7 6	7 8	7 10	7 12	7 14	7 16	7 17	7 19	7 19
39	7 3	7 5	7 7	7 9	7 10	7 12	7 14	7 16	7 18	7 20	7 22	7 22
40	7 5	7 7	7 9	7 11	7 13	7 15	7 17	7 19	7 21	7 23	7 25	7 25
41	7 8	7 10	7 12	7 14	7 16	7 18	7 20	7 22	7 24	7 27	7 29	7 29
42	7 10	7 12	7 14	7 17	7 19	7 21	7 23	7 25	7 28	7 30	7 32	7 32
43	7 13	7 15	7 17	7 19	7 22	7 24	7 26	7 28	7 31	7 33	7 35	7 35
44	7 15	7 18	7 20	7 22	7 25	7 27	7 29	7 31	7 34	7 36	7 39	7 39
45	7 18	7 21	7 23	7 25	7 28	7 30	7 33	7 35	7 38	7 40	7 43	7 43
46	7 21	7 24	7 26	7 29	7 31	7 34	7 36	7 39	7 42	7 44	7 47	7 47
47	7 24	7 27	7 29	7 32	7 35	7 37	7 40	7 43	7 46	7 48	7 51	7 51
48	7 27	7 30	7 33	7 35	7 38	7 41	7 44	7 47	7 50	7 53	7 56	7 56
49	7 31	7 33	7 36	7 39	7 42	7 45	7 48	7 51	7 54	7 57	8 0	8 0
50	7 34	7 37	7 40	7 43	7 46	7 49	7 52	7 55	7 58	8 2	8 5	8 5
51	7 38	7 41	7 43	7 47	7 50	7 53	7 56	8 0	8 3	8 6	8 10	8 10
52	7 41	7 45	7 48	7 51	7 54	7 58	8 1	8 5	8 8	8 12	8 15	8 15
53	7 45	7 49	7 52	7 56	7 59	8 3	8 6	8 10	8 13	8 17	8 21	8 21
54	7 50	7 53	7 57	8 0	8 4	8 8	8 11	8 15	8 19	8 23	8 27	8 27
55	7 54	7 58	8 2	8 5	8 9	8 13	8 17	8 21	8 25	8 29	8 33	8 33
56	7 59	8 3	8 7	8 11	8 15	8 19	8 23	8 27	8 32	8 36	8 40	8 40
57	8 4	8 8	8 12	8 16	8 21	8 25	8 29	8 34	8 39	8 43	8 48	8 48
58	8 9	8 14	8 18	8 22	8 27	8 32	8 36	8 41	8 46	8 51	8 56	8 56
59	8 15	8 20	8 24	8 29	8 34	8 39	8 44	8 49	8 54	9 0	9 5	9 5
60	8 22	8 26	8 31	8 36	8 41	8 47	8 52	8 58	9 3	9 9	9 15	9 15

TABLE XLV.

	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Days.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.
1	6 ^h 9'	3 ^h 56'	2 ^h 4'	0 ^h 10'	10 ^h 19'	8 ^h 17'	6 ^h 13'	4 ^h 9'	2 ^h 13'	0 ^h 25'	10 ^h 25'	8 ^h 22'
2	6 4	3 52	2 0	0 7	10 15	8 13	6 9	4 5	2 10	0 21	10 21	8 18
3	6 0	3 48	1 57	0 3	10 12	8 9	6 5	4 1	2 6	0 18	10 17	8 13
4	5 55	3 44	1 53	0 0	10 8	8 5	6 1	3 57	2 3	0 14	10 13	8 9
				A. M.								
5	5 51	3 40	1 49	11 56	10 4	8 1	5 57	3 53	1 59	0 10	10 9	8 5
6	5 47	3 36	1 45	11 52	10 0	7 57	5 53	3 49	1 55	0 7	10 5	8 0
7	5 42	3 32	1 42	11 49	9 56	7 53	5 49	3 45	1 52	0 8	10 1	7 56
										P. M.		
										12 0		
8	5 38	3 28	1 38	11 45	9 52	7 49	5 44	3 42	1 48	11 56	9 57	7 52
9	5 33	3 24	1 34	11 41	9 48	7 45	5 40	3 38	1 45	11 52	9 53	7 47
10	5 29	3 20	1 31	11 38	9 45	7 41	5 36	3 34	1 41	11 48	9 49	7 43
11	5 25	3 16	1 27	11 34	9 41	7 36	5 32	3 30	1 37	11 45	9 45	7 38
12	5 20	3 12	1 23	11 30	9 37	7 32	5 28	3 26	1 34	11 41	9 41	7 34
13	5 16	3 8	1 20	11 27	9 33	7 28	5 24	3 23	1 30	11 37	9 37	7 30
14	5 12	3 4	1 16	11 23	9 29	7 24	5 20	3 19	1 27	11 34	9 33	7 25
15	5 7	3 0	1 12	11 19	9 25	7 20	5 16	3 15	1 23	11 30	9 29	7 21
16	5 3	2 57	1 9	11 16	9 21	7 16	5 12	3 11	1 19	11 26	9 25	7 16
17	4 59	2 53	1 5	11 12	9 17	7 11	5 8	3 8	1 16	11 22	9 20	7 12
18	4 55	2 50	1 1	11 8	9 13	7 7	5 4	3 4	1 12	11 19	9 16	7 7
19	4 50	2 46	0 58	11 4	9 9	7 3	5 0	3 0	1 9	11 15	9 12	7 3
20	4 46	2 42	0 54	11 1	9 5	6 59	4 56	2 57	1 5	11 11	9 8	6 59
21	4 42	2 38	0 50	10 57	9 1	6 55	4 52	2 54	1 1	11 7	9 4	6 54
22	4 38	2 34	0 47	10 53	8 58	6 51	4 48	2 50	0 58	11 4	9 0	6 50
23	4 33	2 30	0 43	10 50	8 54	6 47	4 44	2 46	0 54	11 0	8 56	6 45
24	4 29	2 27	0 40	10 46	8 50	6 42	4 40	2 43	0 51	10 56	8 52	6 41
25	4 25	2 23	0 36	10 42	8 46	6 38	4 36	2 39	0 47	10 52	8 48	6 36
26	4 21	2 19	0 32	10 38	8 42	6 34	4 32	2 35	0 43	10 48	8 44	6 32
27	4 17	2 15	0 29	10 34	8 38	6 30	4 28	2 32	0 40	10 44	8 39	6 27
28	4 13	2 11	0 25	10 31	8 34	6 26	4 24	2 28	0 36	10 41	8 35	6 23
29	4 8	2 8	0 21	10 27	8 30	6 22	4 20	2 24	0 33	10 37	8 31	6 19
30	4 4		0 18	10 23	8 26	6 17	4 16	2 21	0 29	10 33	8 26	6 14
31	4 0		0 14		8 22		4 12	2 17		10 29		8 10

TABLE XLVI.

DIFFERENCE OF ALTITUDE OF POLE STAR AND POLE.

Argument. Distance of the Star from the Meridian, in Sidereal Time.

SUBTRACT.

Min.	0 Hour.	1 Hour.	2 Hours.	3 Hours.	4 Hours.	5 Hours.	
0	1° 46.9	1° 43.8	1° 32.6	1° 15.6	0° 53.4	0° 27.7	60
5	1 46.9	1 42.7	1 31.4	1 18.9	0 51.4	0 25.4	55
10	1 46.8	1 42.0	1 20.2	1 12.2	0 49.4	0 23.2	50
15	1 46.7	1 41.2	1 28.9	1 10.5	0 47.3	0 20.9	45
20	1 46.5	1 40.4	1 27.6	1 8.7	0 45.2	0 18.6	40
25	1 46.3	1 39.6	1 26.2	1 6.9	0 43.1	0 16.3	35
30	1 46.0	1 38.8	1 24.8	1 5.1	0 40.9	0 14.0	30
35	1 45.7	1 37.9	1 23.4	1 3.2	0 38.8	0 11.6	25
40	1 45.3	1 36.9	1 21.9	1 1.3	0 36.6	0 9.3	20
45	1 44.9	1 35.9	1 20.4	0 59.4	0 34.4	0 7.0	15
50	1 44.4	1 34.8	1 18.8	0 57.4	0 32.2	0 4.7	10
55	1 43.9	1 33.7	1 17.2	0 55.4	0 29.9	0 2.3	5
60	1 43.3	1 32.6	1 15.6	0 53.4	0 27.7	0 0.0	0
	11 Hours.	10 Hours.	9 Hours.	8 Hours.	7 Hours.	6 Hours.	Min.

Add.

TO FIND THE DISTANCE OF OBJECTS AT SEA.

Height in Feet.	Distance in Sea Miles.	Height in Feet.	Distance in Sea Miles.	Height in Feet.	Distance in Sea Miles.	Height in Feet.	Distance in Sea Miles.	Height in Feet.	Distance in Sea Miles.
1	1.06	61	8.31	142	12.67	720	28.53	2550	53.70
2	1.50	62	8.37	144	12.76	740	28.93	2600	54.22
3	1.84	63	8.44	146	12.85	760	29.32	2650	54.74
4	2.13	64	8.51	148	12.94	780	29.70	2700	55.25
5	2.38	65	8.58	150	13.03	800	30.08	2750	55.76
6	2.60	66	8.64	155	13.24	820	30.45	2800	56.27
7	2.81	67	8.70	160	13.45	840	30.82	2850	56.77
8	3.01	68	8.77	165	13.66	860	31.19	2900	57.27
9	3.19	69	8.83	170	13.87	880	31.55	2950	57.76
10	3.36	70	8.89	175	14.07	900	31.90	3000	58.25
11	3.53	71	8.96	180	14.27	920	32.25	3050	58.73
12	3.68	72	9.02	185	14.46	940	32.60	3100	59.21
13	3.83	73	9.09	190	14.66	960	32.95	3150	59.68
14	3.98	74	9.15	195	14.85	980	33.29	3200	60.15
15	4.12	75	9.21	200	15.04	1000	33.63	3250	60.62
16	4.25	76	9.27	210	15.41	1020	33.96	3300	61.09
17	4.38	77	9.33	220	15.77	1040	34.29	3350	61.55
18	4.51	78	9.39	230	16.13	1060	34.62	3400	62.01
19	4.53	79	9.45	240	16.47	1080	34.95	3450	62.46
20	4.76	80	9.51	250	16.81	1100	35.27	3500	62.91
21	4.87	81	9.57	260	17.15	1120	35.59	3550	63.36
22	4.99	82	9.63	270	17.47	1140	35.90	3600	63.80
23	5.10	83	9.69	280	17.79	1160	36.22	3650	64.24
24	5.21	84	9.75	290	18.11	1180	36.54	3700	64.68
25	5.32	85	9.80	300	18.42	1200	36.84	3750	65.12
26	5.42	86	9.86	310	18.72	1220	37.14	3800	65.55
27	5.52	87	9.92	320	19.02	1240	37.45	3850	65.98
28	5.62	88	9.98	330	19.32	1260	37.75	3900	66.41
29	5.72	89	10.03	340	19.61	1280	38.05	3950	66.83
30	5.82	90	10.09	350	19.89	1300	38.34	4000	67.26
31	5.92	91	10.14	360	20.18	1320	38.64	4100	68.09
32	6.01	92	10.20	370	20.46	1340	38.93	4200	68.92
33	6.11	93	10.25	380	20.73	1360	39.22	4300	69.73
34	6.20	94	10.31	390	21.00	1380	39.50	4400	70.54
35	6.29	95	10.36	400	21.27	1400	39.79	4500	71.34
36	6.38	96	10.42	410	21.53	1420	40.07	4600	72.12
37	6.47	97	10.47	420	21.79	1440	40.35	4700	72.91
38	6.56	98	10.53	430	22.05	1460	40.63	4800	73.68
39	6.64	99	10.58	440	22.31	1480	40.91	4900	74.44
40	6.73	100	10.63	450	22.66	1500	41.19	5000	75.20
41	6.81	102	10.74	460	22.81	1550	41.87	5100	75.95
42	6.89	104	10.84	470	23.05	1600	42.54	5200	76.69
43	6.97	106	10.95	480	23.30	1650	43.20	5300	77.42
44	7.05	108	11.05	490	23.54	1700	43.85	5400	78.15
45	7.13	110	11.15	500	23.78	1750	44.49	5500	78.87
46	7.21	112	11.25	510	24.01	1800	45.12	5600	79.58
47	7.29	114	11.35	520	24.23	1850	45.74	5700	80.29
48	7.37	116	11.45	530	24.48	1900	46.35	5800	80.99
49	7.44	118	11.55	540	24.71	1950	46.96	5900	81.69
50	7.52	120	11.65	550	24.94	2000	47.56	6000	82.38
51	7.59	122	11.75	560	25.16	2050	48.15	<div>Height Distance</div> <div>in</div> <div>Nautical</div> <div>or</div> <div>Sea Miles.</div>	
52	7.67	124	11.84	570	25.39	2100	48.73		
53	7.74	126	11.94	580	25.61	2150	49.31		
54	7.81	128	12.03	590	25.83	2200	49.88		
55	7.89	130	12.12	600	26.05	2250	50.44	1	82.92
56	7.96	132	12.22	620	26.48	2300	51.00	2	117.28
57	8.03	134	12.31	640	26.90	2350	51.55	3	143.64
58	8.10	136	12.40	660	27.32	2400	52.10	4	165.89
59	8.17	138	12.49	680	27.73	2450	52.64		
60	8.24	140	12.58	700	28.14	2500	53.17		

TABLE XLVIII.

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TO CONVERT DEGREES, &c. INTO TIME, AND CONVERSELY.

D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.
M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.
1	0 4	61	4 4	121	8 4	181	12 4	241	16 4	301	20 4
2	0 8	62	4 8	122	8 8	182	12 8	242	16 8	302	20 8
3	0 12	63	4 12	123	8 12	183	12 12	243	16 12	303	20 12
4	0 16	64	4 16	124	8 16	184	12 16	244	16 16	304	20 16
5	0 20	65	4 20	125	8 20	185	12 20	245	16 20	305	20 20
6	0 24	66	4 24	126	8 24	186	12 24	246	16 24	306	20 24
7	0 28	67	4 28	127	8 28	187	12 28	247	16 28	307	20 28
8	0 32	68	4 32	128	8 32	188	12 32	248	16 32	308	20 32
9	0 36	69	4 36	129	8 36	189	12 36	249	16 36	309	20 36
10	0 40	70	4 40	130	8 40	190	12 40	250	16 40	310	20 40
11	0 44	71	4 44	131	8 44	191	12 44	251	16 44	311	20 44
12	0 48	72	4 48	132	8 48	192	12 48	252	16 48	312	20 48
13	0 52	73	4 52	133	8 52	193	12 52	253	16 52	313	20 52
14	0 56	74	4 56	134	8 56	194	12 56	254	16 56	314	20 56
15	1 0	75	5 0	135	9 0	195	13 0	255	17 0	315	21 0
16	1 4	76	5 4	136	9 4	196	13 4	256	17 4	316	21 4
17	1 8	77	5 8	137	9 8	197	13 8	257	17 8	317	21 8
18	1 12	78	5 12	138	9 12	198	13 12	258	17 12	318	21 12
19	1 16	79	5 16	139	9 16	199	13 16	259	17 16	319	21 16
20	1 20	80	5 20	140	9 20	200	13 20	260	17 20	320	21 20
21	1 24	81	5 24	141	9 24	201	13 24	261	17 24	321	21 24
22	1 28	82	5 28	142	9 28	202	13 28	262	17 28	322	21 28
23	1 32	83	5 32	143	9 32	203	13 32	263	17 32	323	21 32
24	1 36	84	5 36	144	9 36	204	13 36	264	17 36	324	21 36
25	1 40	85	5 40	145	9 40	205	13 40	265	17 40	325	21 40
26	1 44	86	5 44	146	9 44	206	13 44	266	17 44	326	21 44
27	1 48	87	5 48	147	9 48	207	13 48	267	17 48	327	21 48
28	1 52	88	5 52	148	9 52	208	13 52	268	17 52	328	21 52
29	1 56	89	5 56	149	9 56	209	13 56	269	17 56	329	21 56
30	2 0	90	6 0	150	10 0	210	14 0	270	18 0	330	22 0
31	2 4	91	6 4	151	10 4	211	14 4	271	18 4	331	22 4
32	2 8	92	6 8	152	10 8	212	14 8	272	18 8	332	22 8
33	2 12	93	6 12	153	10 12	213	14 12	273	18 12	333	22 12
34	2 16	94	6 16	154	10 16	214	14 16	274	18 16	334	22 16
35	2 20	95	6 20	155	10 20	215	14 20	275	18 20	335	22 20
36	2 24	96	6 24	156	10 24	216	14 24	276	18 24	336	22 24
37	2 28	97	6 28	157	10 28	217	14 28	277	18 28	337	22 28
38	2 32	98	6 32	158	10 32	218	14 32	278	18 32	338	22 32
39	2 36	99	6 36	159	10 36	219	14 36	279	18 36	339	22 36
40	2 40	100	6 40	160	10 40	220	14 40	280	18 40	340	22 40
41	2 44	101	6 44	161	10 44	221	14 44	281	18 44	341	22 44
42	2 48	102	6 48	162	10 48	222	14 48	282	18 48	342	22 48
43	2 52	103	6 52	163	10 52	223	14 52	283	18 52	343	22 52
44	2 56	104	6 56	164	10 56	224	14 56	284	18 56	344	22 56
45	3 0	105	7 0	165	11 0	225	15 0	285	19 0	345	23 0
46	3 4	106	7 4	166	11 4	226	15 4	286	19 4	346	23 4
47	3 8	107	7 8	167	11 8	227	15 8	287	19 8	347	23 8
48	3 12	108	7 12	168	11 12	228	15 12	288	19 12	348	23 12
49	3 16	109	7 16	169	11 16	229	15 16	289	19 16	349	23 16
50	3 20	110	7 20	170	11 20	230	15 20	290	19 20	350	23 20
51	3 24	111	7 24	171	11 24	231	15 24	291	19 24	351	23 24
52	3 28	112	7 28	172	11 28	232	15 28	292	19 28	352	23 28
53	3 32	113	7 32	173	11 32	233	15 32	293	19 32	353	23 32
54	3 36	114	7 36	174	11 36	234	15 36	294	19 36	354	23 36
55	3 40	115	7 40	175	11 40	235	15 40	295	19 40	355	23 40
56	3 44	116	7 44	176	11 44	236	15 44	296	19 44	356	23 44
57	3 48	117	7 48	177	11 48	237	15 48	297	19 48	357	23 48
58	3 52	118	7 52	178	11 52	238	15 52	298	19 52	358	23 52
59	3 56	119	7 56	179	11 56	239	15 56	299	19 56	359	23 56
60	4 0	120	8 0	180	12 0	240	16 0	300	20 0	360	24 0

DIFFERENCE BETWEEN THE MERIDIAN ALTITUDE OF AN OBJECT, AND ITS ALTITUDE ONE MINUTE BEFORE, OR AFTER THE TIME OF TRANSIT.

Argument. Declination of the Object, of the same Name with the Latitude.													
g. t.	0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°
0°	56.2	56.2	56.1	55.8	55.4	54.9	54.2	53.4	52.5	51.4	50.3	49.0	47.7
2	56.2	56.1	55.8	55.4	54.9	54.2	53.4	52.5	51.4	50.3	49.0	47.7	46.4
4	56.1	55.8	55.4	54.9	54.2	53.4	52.5	51.4	50.3	49.0	47.7	46.4	45.1
6	55.8	55.4	54.9	54.2	53.4	52.5	51.4	50.3	49.0	47.7	46.4	45.1	43.8
8	55.4	54.9	54.2	53.4	52.5	51.4	50.3	49.0	47.7	46.4	45.1	43.8	42.5
0	54.9	54.2	53.4	52.5	51.4	50.3	49.0	47.7	46.4	45.1	43.8	42.5	41.2
2	54.2	53.4	52.5	51.4	50.3	49.0	47.7	46.4	45.1	43.8	42.5	41.2	39.9
4	53.4	52.5	51.4	50.3	49.0	47.7	46.4	45.1	43.8	42.5	41.2	39.9	38.6
6	52.5	51.4	50.3	49.0	47.7	46.4	45.1	43.8	42.5	41.2	39.9	38.6	37.3
8	51.4	50.3	49.0	47.7	46.4	45.1	43.8	42.5	41.2	39.9	38.6	37.3	36.0
0	50.3	49.0	47.7	46.4	45.1	43.8	42.5	41.2	39.9	38.6	37.3	36.0	34.7
2	49.0	47.7	46.4	45.1	43.8	42.5	41.2	39.9	38.6	37.3	36.0	34.7	33.4
4	47.7	46.4	45.1	43.8	42.5	41.2	39.9	38.6	37.3	36.0	34.7	33.4	32.1
6	46.4	45.1	43.8	42.5	41.2	39.9	38.6	37.3	36.0	34.7	33.4	32.1	30.8
8	45.1	43.8	42.5	41.2	39.9	38.6	37.3	36.0	34.7	33.4	32.1	30.8	29.5
0	43.8	42.5	41.2	39.9	38.6	37.3	36.0	34.7	33.4	32.1	30.8	29.5	28.2
2	42.5	41.2	39.9	38.6	37.3	36.0	34.7	33.4	32.1	30.8	29.5	28.2	26.9
4	41.2	39.9	38.6	37.3	36.0	34.7	33.4	32.1	30.8	29.5	28.2	26.9	25.6
6	39.9	38.6	37.3	36.0	34.7	33.4	32.1	30.8	29.5	28.2	26.9	25.6	24.3
8	38.6	37.3	36.0	34.7	33.4	32.1	30.8	29.5	28.2	26.9	25.6	24.3	23.0
0	37.3	36.0	34.7	33.4	32.1	30.8	29.5	28.2	26.9	25.6	24.3	23.0	21.7
2	36.0	34.7	33.4	32.1	30.8	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4
4	34.7	33.4	32.1	30.8	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.1
6	33.4	32.1	30.8	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.1	17.8
8	32.1	30.8	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.1	17.8	16.5
0	30.8	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.1	17.8	16.5	15.2
2	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.1	17.8	16.5	15.2	13.9
4	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.1	17.8	16.5	15.2	13.9	12.6
6	26.9	25.6	24.3	23.0	21.7	20.4	19.1	17.8	16.5	15.2	13.9	12.6	11.3
8	25.6	24.3	23.0	21.7	20.4	19.1	17.8	16.5	15.2	13.9	12.6	11.3	10.0
0	24.3	23.0	21.7	20.4	19.1	17.8	16.5	15.2	13.9	12.6	11.3	10.0	8.7
2	23.0	21.7	20.4	19.1	17.8	16.5	15.2	13.9	12.6	11.3	10.0	8.7	7.4
4	21.7	20.4	19.1	17.8	16.5	15.2	13.9	12.6	11.3	10.0	8.7	7.4	6.1
6	20.4	19.1	17.8	16.5	15.2	13.9	12.6	11.3	10.0	8.7	7.4	6.1	4.8
8	19.1	17.8	16.5	15.2	13.9	12.6	11.3	10.0	8.7	7.4	6.1	4.8	3.5
0	17.8	16.5	15.2	13.9	12.6	11.3	10.0	8.7	7.4	6.1	4.8	3.5	2.2
2	16.5	15.2	13.9	12.6	11.3	10.0	8.7	7.4	6.1	4.8	3.5	2.2	0.9
4	15.2	13.9	12.6	11.3	10.0	8.7	7.4	6.1	4.8	3.5	2.2	0.9	-0.4
6	13.9	12.6	11.3	10.0	8.7	7.4	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7
8	12.6	11.3	10.0	8.7	7.4	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0
0	11.3	10.0	8.7	7.4	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3
2	10.0	8.7	7.4	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6
4	8.7	7.4	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9
6	7.4	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2
8	6.1	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5
0	4.8	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8
2	3.5	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1
4	2.2	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4
6	0.9	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7
8	-0.4	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0
0	-1.7	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3
2	-3.0	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6
4	-4.3	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9
6	-5.6	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2
8	-6.9	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5
0	-8.2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8
2	-9.5	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1
4	-10.8	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4
6	-12.1	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7
8	-13.4	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0
0	-14.7	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3
2	-16.0	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6
4	-17.3	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9
6	-18.6	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2
8	-19.9	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5
0	-21.2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8
2	-22.5	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1
4	-23.8	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1	-39.4
6	-25.1	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1	-39.4	-40.7
8	-26.4	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1	-39.4	-40.7	-42.0
0	-27.7	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1	-39.4	-40.7	-42.0	-43.3
2	-29.0	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1	-39.4	-40.7	-42.0	-43.3	-44.6
4	-30.3	-31.6	-32.9	-34.2	-35.5	-36.8	-38.1	-39.4	-40.7	-42.0	-43.3	-44.6	-45.9

TABLE L.

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TO REDUCE THE NUMBERS IN THE PRECEDING TABLE, TO OTHER GIVEN
INTERVALS OF TIME FROM NOON.

Argument. Interval between the Instant of Observation and Noon.										
	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'
0'	0.0	1.0	4.0	9.0	16.0	25.0	36.0	49.0	64.0	81.0
1	0.0	1.0	4.1	9.1	16.1	25.2	36.2	49.2	64.3	81.3
2	0.0	1.1	4.1	9.2	16.2	25.3	36.4	49.5	64.5	81.6
3	0.0	1.1	4.2	9.3	16.4	25.5	36.6	49.7	64.8	81.9
4	0.0	1.1	4.3	9.4	16.5	25.7	36.8	49.9	65.1	82.2
5	0.0	1.2	4.3	9.5	16.7	25.8	37.0	50.2	65.3	82.5
6	0.0	1.2	4.4	9.6	16.8	26.0	37.2	50.4	65.6	82.8
7	0.0	1.3	4.5	9.7	16.9	26.2	37.4	50.6	65.9	83.1
8	0.0	1.3	4.6	9.8	17.1	26.3	37.6	50.9	66.1	83.4
9	0.0	1.3	4.6	9.9	17.2	26.5	37.8	51.1	66.4	83.7
10	0.0	1.4	4.7	10.0	17.4	26.7	38.0	51.4	66.7	84.0
11	0.0	1.4	4.8	10.1	17.5	26.9	38.2	51.6	67.0	84.3
12	0.0	1.4	4.8	10.2	17.6	27.0	38.4	51.8	67.2	84.6
13	0.0	1.5	4.9	10.3	17.8	27.2	38.6	52.1	67.5	84.9
14	0.1	1.5	5.0	10.4	17.9	27.4	38.8	52.3	67.8	85.3
15	0.1	1.6	5.1	10.6	18.1	27.6	39.0	52.5	68.1	85.6
16	0.1	1.6	5.1	10.7	18.2	27.7	39.3	52.8	68.3	85.9
17	0.1	1.6	5.2	10.8	18.3	27.9	39.5	53.1	68.6	86.2
18	0.1	1.7	5.3	10.9	18.5	28.1	39.7	53.3	68.9	86.5
19	0.1	1.7	5.4	11.0	18.6	28.3	39.9	53.5	69.2	86.8
20	0.1	1.8	5.4	11.1	18.8	28.4	40.1	53.8	69.4	87.1
21	0.1	1.8	5.5	11.2	18.9	28.6	40.3	54.0	69.7	87.4
22	0.1	1.9	5.6	11.3	19.1	28.8	50.5	54.3	70.0	87.7
23	0.1	1.9	5.7	11.4	19.2	29.0	40.7	54.5	70.3	88.0
24	0.2	2.0	5.8	11.6	19.4	29.2	41.0	54.8	70.6	88.4
25	0.2	2.0	5.8	11.7	19.5	29.3	41.2	55.0	70.8	88.7
26	0.2	2.1	5.9	11.8	19.7	29.5	41.4	55.3	71.1	89.0
27	0.2	2.1	6.0	11.9	19.8	29.7	41.6	55.5	71.4	89.3
28	0.2	2.2	6.1	12.0	19.9	29.9	41.8	55.8	71.7	89.6
29	0.2	2.2	6.2	12.1	20.1	30.1	42.0	56.0	72.0	89.9
30	0.3	2.3	6.3	12.3	20.3	30.3	42.3	56.3	72.3	90.3
31	0.3	2.3	6.3	12.4	20.4	30.4	42.5	56.5	72.5	90.6
32	0.3	2.4	6.4	12.5	20.5	30.6	42.7	56.7	72.8	90.9
33	0.3	2.4	6.5	12.6	20.7	30.8	42.9	57.0	73.1	91.2
34	0.3	2.5	6.6	12.7	20.8	31.0	43.1	57.3	73.4	91.5
35	0.3	2.5	6.7	12.8	21.0	31.2	43.3	57.5	73.7	91.8
36	0.4	2.6	6.8	13.0	21.2	31.4	43.6	57.8	74.0	92.2
37	0.4	2.6	6.9	13.1	21.3	31.5	43.8	58.0	74.3	92.5
38	0.4	2.7	6.9	13.2	21.5	31.7	44.0	58.3	74.5	92.8
39	0.4	2.7	7.0	13.3	21.6	31.9	44.2	58.5	74.8	93.1
40	0.4	2.8	7.1	13.4	21.8	32.1	44.4	58.8	75.1	93.4
41	0.5	2.8	7.2	13.6	21.9	32.3	44.7	59.0	75.4	93.8
42	0.5	2.9	7.3	13.7	22.1	32.5	44.9	59.3	75.7	94.1
43	0.5	2.9	7.4	13.8	22.2	32.7	45.1	59.5	76.0	94.4
44	0.5	3.0	7.5	13.9	22.4	32.9	45.3	59.8	76.3	94.7
45	0.6	3.1	7.6	14.1	22.6	33.1	45.5	60.0	76.6	95.1
46	0.6	3.1	7.7	14.2	22.7	33.3	45.8	60.3	76.8	95.4
47	0.6	3.2	7.7	14.3	22.9	33.4	46.0	60.6	77.1	95.7
48	0.6	3.2	7.8	14.4	23.0	33.6	46.2	60.8	77.4	96.0
49	0.7	3.3	7.9	14.6	23.2	33.8	46.5	61.1	77.7	96.4
50	0.7	3.4	8.0	14.7	23.4	34.0	46.7	61.4	78.0	96.7
51	0.7	3.4	8.1	14.8	23.5	34.2	46.9	61.6	78.3	97.0
52	0.8	3.5	8.2	15.0	23.7	34.4	47.2	61.9	78.6	97.4
53	0.8	3.5	8.3	15.1	23.8	34.6	47.4	62.1	78.9	97.7
54	0.8	3.6	8.4	15.2	24.0	34.8	47.6	62.4	79.2	98.0
55	0.8	3.7	8.5	15.3	24.2	35.0	47.8	62.7	79.5	98.3
56	0.9	3.7	8.6	15.5	24.3	35.2	48.1	62.9	79.8	98.7
57	0.9	3.8	8.7	15.6	24.5	35.4	48.3	63.2	80.1	99.0
58	0.9	3.9	8.8	15.7	24.7	35.6	48.5	63.5	80.4	99.3
59	1.0	3.9	8.9	15.9	24.8	35.8	48.8	63.7	80.7	99.7

To Reduce the Longitude, Latitude, Right Ascension, Declination, Semi-diameter, and Horizontal Parallax of the Moon, as given in the Nautical Almanack, to any given Meridian, and to any given Time under that Meridian.

Arg. Time after noon or mid.	Argument. Variation in Twelve Hours.															Arg. Longitude of Ship.
	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	8 ^h	9 ^h	10 ^h	20 ^h	30 ^h	40 ^h	50 ^h		
0h 0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0°	
0 12	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	
0 24	0	0	0	0	0	0	0	0	0	0	0	1	1	2	6	
0 36	0	0	0	0	0	0	0	0	0	0	1	1	2	2	9	
0 48	0	0	0	0	0	0	0	0	1	1	1	2	3	3	12	
1 0	0	0	0	0	0	0	0	1	1	1	1	2	3	4	15	
1 12	0	0	0	0	0	1	1	1	1	1	1	2	3	4	18	
1 24	0	0	0	0	1	1	1	1	1	1	1	2	3	5	21	
1 36	0	0	0	1	1	1	1	1	1	1	1	3	4	5	24	
1 48	0	0	0	1	1	1	1	1	1	1	1	3	4	6	27	
2 0	0	0	0	1	1	1	1	1	1	2	3	5	7	8	30	
2 12	0	0	1	1	1	1	1	1	2	2	4	5	7	9	33	
2 24	0	0	1	1	1	1	1	2	2	2	4	6	8	10	36	
2 36	0	0	1	1	1	1	2	2	2	2	4	6	9	11	39	
2 48	0	0	1	1	1	1	2	2	2	2	5	7	9	12	42	
3 0	0	0	1	1	1	1	2	2	2	2	5	7	10	12	45	
3 12	0	1	1	1	1	2	2	2	2	3	5	8	11	13	48	
3 24	0	1	1	1	1	2	2	2	3	3	6	8	11	14	51	
3 36	0	1	1	1	1	2	2	2	3	3	6	9	12	15	54	
3 48	0	1	1	1	2	2	2	3	3	3	6	9	13	16	57	
4 0	0	1	1	1	2	2	2	3	3	3	7	10	13	17	60	
4 12	0	1	1	1	2	2	2	3	3	3	7	10	14	17	63	
4 24	0	1	1	1	2	2	3	3	3	4	7	11	15	18	66	
4 36	0	1	1	2	2	2	3	3	3	4	8	11	15	19	69	
4 48	0	1	1	2	2	2	3	3	4	4	8	12	16	20	72	
5 0	0	1	1	2	2	2	3	3	4	4	8	12	17	21	75	
5 12	0	1	1	2	2	3	3	3	4	4	9	13	17	22	78	
5 24	0	1	1	2	2	3	3	4	4	4	9	13	18	22	81	
5 36	0	1	1	2	2	3	3	4	4	5	9	14	19	23	84	
5 48	0	1	1	2	2	3	3	4	4	5	10	14	19	24	87	
6 0	0	1	1	2	2	3	3	4	4	5	10	15	20	25	90	
6 12	1	1	2	2	3	3	4	4	5	5	10	15	21	26	93	
6 24	1	1	2	2	3	3	4	4	5	5	11	16	21	27	96	
6 36	1	1	2	2	3	3	4	4	5	5	11	16	22	27	99	
6 48	1	1	2	2	3	3	4	5	5	6	11	17	23	28	102	
7 0	1	1	2	2	3	3	4	5	5	6	12	17	23	29	105	
7 12	1	1	2	2	3	4	4	5	5	6	12	18	24	30	108	
7 24	1	1	2	2	3	4	4	5	6	6	12	18	25	31	111	
7 36	1	1	2	3	3	4	4	5	6	6	13	19	25	32	114	
7 48	1	1	2	3	3	4	5	5	6	6	13	19	26	32	117	
8 0	1	1	2	3	3	4	5	5	6	7	13	20	27	33	120	
8 12	1	1	2	3	3	4	5	5	6	7	14	20	27	34	123	
8 24	1	1	2	3	3	4	5	6	6	7	14	21	28	35	126	
8 36	1	1	2	3	4	4	5	6	6	7	14	21	29	36	129	
8 48	1	1	2	3	4	4	5	6	7	7	15	22	29	37	132	
9 0	1	1	2	3	4	4	5	6	7	7	15	22	30	37	135	
9 12	1	2	2	3	4	5	5	6	7	8	15	23	31	38	138	
9 24	1	2	2	3	4	5	5	6	7	8	16	23	31	39	141	
9 36	1	2	2	3	4	5	6	6	7	8	16	24	32	40	144	
9 48	1	2	2	3	4	5	6	7	7	8	16	24	33	41	147	
10 0	1	2	2	3	4	5	6	7	7	8	17	25	33	42	150	
10 12	1	2	3	3	4	5	6	7	8	8	17	25	34	42	153	
10 24	1	2	3	3	4	5	6	7	8	9	17	26	35	43	156	
10 36	1	2	3	4	4	5	6	7	8	9	18	26	35	44	159	
10 48	1	2	3	4	4	5	6	7	8	9	18	27	36	45	162	
11 0	1	2	3	4	5	5	6	7	8	9	18	27	37	46	165	
11 12	1	2	3	4	5	6	6	7	8	9	19	28	37	47	168	
11 24	1	2	3	4	5	6	7	8	9	9	19	28	38	47	171	
11 36	1	2	3	4	5	6	7	8	9	10	19	29	39	48	174	
11 48	1	2	3	4	5	6	7	8	9	10	20	29	39	49	177	
12 0	1	2	3	4	5	6	7	8	9	10	20	30	40	50	180	

To Reduce the Longitude, Latitude, Right Ascension, Declination, Semi-diameter, and Horizontal Parallax of the Moon, as given in the Nautical Almanack, to any given Meridian, and to any given Time under that Meridian.

Arg. Time after noon or mid.	Argument. Variation in Twelve Hours.																				Arg. Longitude of Ship.							
	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	20'	30'	40'	50'														
0h 0'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0°							
0 12	0	10	20	30	40	50	60	70	80	90	10	0	20	30	40	50	60	70	80	90	3							
0 24	0	20	40	60	80	100	120	140	160	180	20	0	40	1	0	1	20	1	40	6	6							
0 36	0	30	60	90	120	150	180	210	240	270	30	0	1	30	2	0	2	30	9	9	9							
0 48	0	40	80	120	160	200	240	280	320	360	40	0	1	20	2	0	2	40	3	20	12							
1 0	0	50	100	150	200	250	300	350	400	450	50	0	1	40	2	30	3	20	4	10	15							
1 12	0	60	120	180	240	300	360	420	480	540	1	0	2	30	3	0	4	0	5	0	18							
1 24	0	70	140	210	280	350	420	490	560	3	1	0	2	20	3	30	4	40	5	50	21							
1 36	0	80	160	240	320	400	480	560	1	4	1	12	1	20	2	40	5	20	6	40	24							
1 48	0	90	180	270	360	450	540	1	5	1	12	1	21	1	30	3	0	4	30	7	30	27						
2 0	0	100	200	300	400	500	1	0	1	10	1	20	1	30	1	40	3	20	5	0	6	40	30					
2 12	0	110	220	330	440	550	1	1	17	1	28	1	39	1	50	3	40	5	30	7	20	9	10	33				
2 24	0	120	240	360	480	1	0	1	24	1	36	1	48	2	0	4	0	6	0	8	0	10	0	36				
2 36	0	130	260	390	520	1	5	1	18	1	31	1	44	1	57	2	10	4	20	6	30	8	40	39				
2 48	0	140	280	420	560	1	10	1	24	1	38	1	52	2	6	2	20	4	40	7	0	9	20	42				
3 0	0	150	300	450	1	0	1	5	1	30	1	45	2	0	2	15	2	30	5	0	7	30	10	45				
3 12	0	160	320	480	1	4	1	20	1	36	1	52	2	8	2	24	2	40	5	20	8	0	10	48				
3 24	0	170	340	510	1	8	1	25	1	42	1	59	2	16	2	33	2	50	5	40	8	30	11	20	51			
3 36	0	180	360	540	1	12	1	30	1	48	2	6	2	24	2	42	3	0	6	0	9	0	12	0	54			
3 48	0	190	380	570	1	16	1	35	1	54	2	13	2	32	2	51	3	10	6	20	9	30	12	40	57			
4 0	0	200	400	1	0	1	20	1	40	2	0	2	20	2	40	3	0	3	20	6	40	10	0	13	20	60		
4 12	0	210	420	1	31	1	24	1	45	2	6	2	27	2	48	3	9	30	7	0	10	30	14	0	17	63		
4 24	0	220	440	1	61	1	28	1	50	2	12	2	34	2	56	3	18	40	7	20	11	0	14	40	18	66		
4 36	0	230	460	1	91	1	32	1	55	2	18	2	41	3	48	3	27	3	50	7	10	11	30	15	20	69		
4 48	0	240	480	1	121	1	36	2	0	2	24	2	48	3	12	3	36	4	0	8	0	12	0	16	0	20	72	
5 0	0	250	500	1	151	1	40	2	5	2	30	2	55	3	20	3	45	4	10	8	20	12	30	16	40	20	75	
5 12	0	260	520	1	181	1	44	2	10	2	36	3	28	3	54	2	50	4	20	8	40	13	0	17	20	41	78	
5 24	0	270	540	1	211	1	48	2	15	2	42	3	36	3	3	3	64	3	30	9	0	13	30	18	0	22	81	
5 36	0	280	560	1	241	1	52	2	20	2	48	3	16	3	44	4	12	4	40	9	20	14	0	18	40	23	84	
5 48	0	290	580	1	271	1	56	2	25	2	54	3	23	3	52	4	21	4	50	9	40	14	30	19	20	24	87	
6 0	0	300	1	0	1	2	0	2	30	3	0	3	30	4	0	30	5	0	10	0	15	0	20	0	25	0	90	
6 12	0	310	1	21	33	2	4	2	35	3	6	3	37	4	8	39	5	10	10	20	15	30	20	40	25	50	93	
6 24	0	320	1	41	36	2	8	2	40	3	12	3	44	4	16	48	5	20	10	40	16	0	21	20	26	40	96	
6 36	0	330	1	61	39	2	12	2	45	3	18	3	51	4	24	57	5	30	11	0	16	30	22	0	27	30	99	
6 48	0	340	1	81	42	2	16	2	50	3	24	3	58	4	32	5	65	40	11	20	17	0	22	40	28	20	102	
7 0	0	350	1	101	45	2	20	2	55	3	30	4	5	40	5	15	50	11	40	17	30	23	0	29	10	105		
7 12	0	360	1	121	48	2	24	0	3	36	4	12	4	48	5	24	6	0	12	0	18	0	24	0	30	0	108	
7 24	0	370	1	141	51	2	28	3	5	42	4	19	4	56	5	33	6	10	12	20	18	30	24	40	30	50	111	
7 36	0	380	1	161	54	2	32	3	10	3	48	4	26	5	42	6	30	12	40	19	0	25	20	31	40	114		
7 48	0	390	1	181	57	2	36	3	15	3	54	4	33	5	12	5	16	30	13	0	19	30	26	0	32	30	117	
8 0	0	400	1	202	0	2	40	3	20	4	0	4	40	5	20	6	0	6	40	13	20	20	0	26	40	33	20	120
8 12	0	410	1	222	3	2	44	3	25	4	6	4	47	5	28	6	9	60	13	40	20	30	27	20	34	10	123	
8 24	0	420	1	242	6	2	48	3	30	4	12	4	54	5	36	18	7	0	14	0	21	0	28	0	35	0	126	
8 36	0	430	1	262	9	2	52	3	35	4	18	5	1	5	44	6	27	7	10	14	20	21	30	28	40	35	50	129
8 48	0	440	1	282	12	2	56	3	40	4	24	5	8	5	52	6	36	7	20	14	40	22	0	29	20	36	40	132
9 0	0	450	1	302	15	3	0	3	45	4	30	5	15	6	0	6	45	7	30	15	0	22	30	30	0	37	30	135
9 12	0	460	1	322	18	3	4	50	4	36	5	22	6	8	6	54	7	40	15	20	23	0	30	40	38	20	138	
9 24	0	470	1	342	21	3	8	55	4	42	5	29	6	16	7	3	50	15	40	23	30	31	0	39	10	141		
9 36	0	480	1	362	24	3	12	0	4	48	5	36	6	24	7	12	8	0	16	0	24	0	32	0	40	0	144	
9 48	0	490	1	382	27	3	16	4	5	54	5	43	6	32	7	21	8	10	16	20	24	30	32	40	40	50	147	
10 0	0	500	1	402	30	3	20	4	10	5	0	5	50	6	40	7	30	8	20	16	40	25	0	33	20	41	40	150
10 12	0	510	1	422	33	3	24	4	15	5	5	57	6	48	7	39	8	30	17	0	25	50	34	0	42	30	153	
10 24	0	520	1	442	36	3	28	4	20	5	12	6	56	7	48	8	40	17	20	26	0	36	0	44	40	35	20	156
10 36	0	530	1	462	39	3	32	4	25	5	18	6	11	7	4	57	8	50	17	40	26	30	35	20	44	10	159	
10 48	0	540	1	482	42	3	36	4	30	5	24	6	18	7	12	8	6	9	18	0	27	0	36	0	45	0	162	
11 0	0	550	1	502	45	3	40	4	35	5	30	6	25	7	20	8	15	10	18	20	27	30	36	40	45	50	165	
11 12	0	560	1	522	48	3	44	4	40	5	36	6	32	7	28	8	24	9	20	18	40	28	0	37	20	46	40	168
11 24	0	570	1	542	51	3	48	4	45	5	42	6	39	7	36	8	33	9	30	19	0	28	30	38	0	47	30	171
11 36	0	580	1	562	54	3	52	4	50	5	48	6	46	7	44	8	42	9	40	19	20	29	0	38	40	48	20	174
11 48	0	590	1	582	57	3	56	4	55	5	54	6	53	7	52	8	51	9	50	19	40	29	30	39	20	49	10	177
12 0	0	600	1	602	0	4	0	5	60	6	0	7	0	8	0	9	0	10	0	20	0	30	0	40	0	50	0	180

To Reduce the Longitude, Latitude, Right Ascension, Declination, Semi-diameter, and Horizontal Parallax of the Moon, as given in the Nautical Almanack, to any given Meridian, and to any given Time under that Meridian.

Arg. Time after noon or midnight	Argument. Variation in Twelve Hours.										Arg. Longitude of ship.
	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	
0 ^h 0'	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0° 0' 0"	0°
0 12	0 1 00	0 2 00	0 3 00	0 4 00	0 5 00	0 6 00	0 7 00	0 8 00	0 9 00	0 10 00	3
0 24	0 2 00	0 4 00	0 6 00	0 8 00	0 10 00	0 12 00	0 14 00	0 16 00	0 18 00	0 20 00	6
0 36	0 3 00	0 6 00	0 9 00	0 12 00	0 15 00	0 18 00	0 21 00	0 24 00	0 27 00	0 30 00	9
0 48	0 4 00	0 8 00	0 12 00	0 16 00	0 20 00	0 24 00	0 28 00	0 32 00	0 36 00	0 40 00	12
1 0	0 5 00	0 10 00	0 15 00	0 20 00	0 25 00	0 30 00	0 35 00	0 40 00	0 45 00	0 50 00	15
1 12	0 6 00	0 12 00	0 18 00	0 24 00	0 30 00	0 36 00	0 42 00	0 48 00	0 54 00	1 0 00	18
1 24	0 7 00	0 14 00	0 21 00	0 28 00	0 35 00	0 42 00	0 49 00	0 56 00	1 3 00	1 10 00	21
1 36	0 8 00	0 16 00	0 24 00	0 32 00	0 40 00	0 48 00	0 56 00	1 4 00	1 12 00	1 20 00	24
1 48	0 9 00	0 18 00	0 27 00	0 36 00	0 45 00	0 54 00	1 3 00	1 12 00	1 21 00	1 30 00	27
2 0	0 10 00	0 20 00	0 30 00	0 40 00	0 50 00	1 0 00	1 10 00	1 20 00	1 30 00	1 40 00	30
2 12	0 11 00	0 22 00	0 33 00	0 44 00	0 55 00	1 6 00	1 17 00	1 28 00	1 39 00	1 50 00	33
2 24	0 12 00	0 24 00	0 36 00	0 48 00	1 0 00	1 12 00	1 24 00	1 36 00	1 48 00	2 0 00	36
2 36	0 13 00	0 26 00	0 39 00	0 52 00	1 5 00	1 18 00	1 31 00	1 44 00	1 57 00	2 10 00	39
2 48	0 14 00	0 28 00	0 42 00	0 56 00	1 10 00	1 24 00	1 38 00	1 52 00	2 6 00	2 20 00	42
3 0	0 15 00	0 30 00	0 45 00	1 0 00	1 15 00	1 30 00	1 45 00	2 0 00	2 15 00	2 30 00	45
3 12	0 16 00	0 32 00	0 48 00	1 4 00	1 20 00	1 36 00	1 52 00	2 8 00	2 24 00	2 40 00	48
3 24	0 17 00	0 34 00	0 51 00	1 8 00	1 25 00	1 42 00	1 59 00	2 16 00	2 33 00	2 50 00	51
3 36	0 18 00	0 36 00	0 54 00	1 12 00	1 30 00	1 48 00	2 6 00	2 24 00	2 42 00	3 0 00	54
3 48	0 19 00	0 38 00	0 57 00	1 16 00	1 35 00	1 54 00	2 13 00	2 32 00	2 51 00	3 10 00	57
4 0	0 20 00	0 40 00	1 0 00	1 20 00	1 40 00	2 0 00	2 20 00	2 40 00	3 0 00	3 20 00	60
4 12	0 21 00	0 42 00	1 3 00	1 24 00	1 45 00	2 6 00	2 27 00	2 48 00	3 9 00	3 30 00	63
4 24	0 22 00	0 44 00	1 6 00	1 28 00	1 50 00	2 12 00	2 34 00	2 56 00	3 18 00	3 40 00	66
4 36	0 23 00	0 46 00	1 9 00	1 32 00	1 55 00	2 18 00	2 41 00	3 4 00	3 27 00	3 50 00	69
4 48	0 24 00	0 48 00	1 12 00	1 36 00	2 0 00	2 24 00	2 48 00	3 12 00	3 36 00	4 0 00	72
5 0	0 25 00	0 50 00	1 15 00	1 40 00	2 5 00	2 30 00	2 55 00	3 20 00	3 45 00	4 10 00	75
5 12	0 26 00	0 52 00	1 18 00	1 44 00	2 10 00	2 36 00	3 0 00	3 28 00	3 54 00	4 20 00	78
5 24	0 27 00	0 54 00	1 21 00	1 48 00	2 15 00	2 42 00	3 9 00	3 36 00	4 3 00	4 30 00	81
5 36	0 28 00	0 56 00	1 24 00	1 52 00	2 20 00	2 48 00	3 16 00	3 44 00	4 12 00	4 40 00	84
5 48	0 29 00	0 58 00	1 27 00	1 56 00	2 25 00	2 54 00	3 23 00	3 52 00	4 21 00	4 50 00	87
6 0	0 30 00	1 0 00	1 30 00	2 0 00	2 30 00	3 0 00	3 30 00	4 0 00	4 30 00	5 0 00	90
6 12	0 31 00	1 2 00	1 33 00	2 4 00	2 35 00	3 6 00	3 37 00	4 8 00	4 39 00	5 10 00	93
6 24	0 32 00	1 4 00	1 36 00	2 8 00	2 40 00	3 12 00	3 44 00	4 16 00	4 48 00	5 20 00	96
6 36	0 33 00	1 6 00	1 39 00	2 12 00	2 45 00	3 18 00	3 51 00	4 24 00	4 57 00	5 30 00	99
6 48	0 34 00	1 8 00	1 42 00	2 16 00	2 50 00	3 24 00	3 58 00	4 32 00	5 6 00	5 40 00	102
7 0	0 35 00	1 10 00	1 45 00	2 20 00	2 55 00	3 30 00	4 5 00	4 40 00	5 15 00	5 50 00	105
7 12	0 36 00	1 12 00	1 48 00	2 24 00	3 0 00	3 36 00	4 12 00	4 48 00	5 24 00	6 0 00	108
7 24	0 37 00	1 14 00	1 51 00	2 28 00	3 5 00	3 42 00	4 19 00	4 56 00	5 33 00	6 10 00	111
7 36	0 38 00	1 16 00	1 54 00	2 32 00	3 10 00	3 48 00	4 26 00	5 4 00	5 42 00	6 20 00	114
7 48	0 39 00	1 18 00	1 57 00	2 36 00	3 15 00	3 54 00	4 33 00	5 12 00	5 51 00	6 30 00	117
8 0	0 40 00	1 20 00	2 0 00	2 40 00	3 20 00	4 0 00	4 40 00	5 20 00	6 0 00	6 40 00	120
8 12	0 41 00	1 22 00	2 3 00	2 44 00	3 25 00	4 6 00	4 47 00	5 28 00	6 9 00	6 50 00	123
8 24	0 42 00	1 24 00	2 6 00	2 48 00	3 30 00	4 12 00	4 54 00	5 36 00	6 18 00	7 0 00	126
8 36	0 43 00	1 26 00	2 9 00	2 52 00	3 35 00	4 18 00	5 1 00	5 44 00	6 27 00	7 10 00	129
8 48	0 44 00	1 28 00	2 12 00	2 56 00	3 40 00	4 24 00	5 8 00	5 52 00	6 36 00	7 20 00	132
9 0	0 45 00	1 30 00	2 15 00	3 0 00	3 45 00	4 30 00	5 15 00	6 0 00	6 45 00	7 30 00	135
9 12	0 46 00	1 32 00	2 18 00	3 4 00	3 50 00	4 36 00	5 22 00	6 8 00	6 54 00	7 40 00	138
9 24	0 47 00	1 34 00	2 21 00	3 8 00	3 55 00	4 42 00	5 29 00	6 16 00	7 3 00	7 50 00	141
9 36	0 48 00	1 36 00	2 24 00	3 12 00	4 0 00	4 48 00	5 36 00	6 24 00	7 12 00	8 0 00	144
9 48	0 49 00	1 38 00	2 27 00	3 16 00	4 5 00	4 54 00	5 43 00	6 32 00	7 21 00	8 10 00	147
10 0	0 50 00	1 40 00	2 30 00	3 20 00	4 10 00	5 0 00	5 50 00	6 40 00	7 30 00	8 20 00	150
10 12	0 51 00	1 42 00	2 33 00	3 24 00	4 15 00	5 6 00	5 57 00	6 48 00	7 39 00	8 30 00	153
10 24	0 52 00	1 44 00	2 36 00	3 28 00	4 20 00	5 12 00	6 4 00	6 56 00	7 48 00	8 40 00	156
10 36	0 53 00	1 46 00	2 39 00	3 32 00	4 25 00	5 18 00	6 11 00	7 4 00	7 57 00	8 50 00	159
10 48	0 54 00	1 48 00	2 42 00	3 36 00	4 30 00	5 24 00	6 18 00	7 12 00	8 6 00	9 0 00	162
11 0	0 55 00	1 50 00	2 45 00	3 40 00	4 35 00	5 30 00	6 25 00	7 20 00	8 15 00	9 10 00	165
11 12	0 56 00	1 52 00	2 48 00	3 44 00	4 40 00	5 36 00	6 32 00	7 28 00	8 24 00	9 20 00	168
11 24	0 57 00	1 54 00	2 51 00	3 48 00	4 45 00	5 42 00	6 39 00	7 36 00	8 33 00	9 30 00	171
11 36	0 58 00	1 56 00	2 54 00	3 52 00	4 50 00	5 48 00	6 46 00	7 44 00	8 42 00	9 40 00	174
11 48	0 59 00	1 58 00	2 57 00	3 56 00	4 55 00	5 54 00	6 53 00	7 52 00	8 51 00	9 50 00	177
12 0	1 0 00	2 0 00	3 0 00	4 0 00	5 0 00	6 0 00	7 0 00	8 0 00	9 0 00	10 0 00	180

TABLE LII.
EQUATION OF SECOND DIFFERENCE.

Arg. Time after noon or mid.	Argument. Second Difference of the Moon's Place.															Arg. time after noon o m. d.	
	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	15"	20"	25"	30"	45"		50"
0 ^h 0'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12 ^h 0'
0 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11 50
0 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11 40
0 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	11 30
0 40	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	11 20
0 50	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	11 10
1 0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	11 0
1 10	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	10 50
1 20	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	10 40
1 30	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	3	10 30
1 40	0	0	0	0	0	0	0	0	1	1	1	1	1	2	2	3	10 20
1 50	0	0	0	0	0	0	0	0	1	1	1	1	2	2	3	3	10 10
2 0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	3	3	10 0
2 10	0	0	0	0	0	0	0	0	1	1	1	1	2	2	3	4	9 50
2 20	0	0	0	0	0	0	0	1	1	1	1	1	2	2	3	4	9 40
2 30	0	0	0	0	0	0	0	1	1	1	1	1	2	2	3	4	9 30
2 40	0	0	0	0	0	0	0	1	1	1	1	1	2	2	3	4	9 20
2 50	0	0	0	0	0	0	0	1	1	1	1	1	2	2	3	4	9 10
3 0	0	0	0	0	0	0	1	1	1	1	1	1	2	2	3	4	9 0
3 10	0	0	0	0	0	1	1	1	1	1	1	1	2	2	3	4	8 50
3 20	0	0	0	0	0	1	1	1	1	1	1	2	2	3	4	5	8 40
3 30	0	0	0	0	0	1	1	1	1	1	2	2	3	3	4	5	8 30
3 40	0	0	0	0	0	1	1	1	1	1	2	2	3	3	4	5	8 20
3 50	0	0	0	0	0	1	1	1	1	1	2	2	3	3	4	5	8 10
4 0	0	0	0	0	0	1	1	1	1	1	2	2	3	3	4	6	8 0
4 10	0	0	0	0	0	1	1	1	1	1	2	2	3	3	5	6	7 40
4 20	0	0	0	0	0	1	1	1	1	1	2	2	3	3	5	6	7 30
4 30	0	0	0	0	0	1	1	1	1	1	2	2	3	4	5	6	7 20
4 40	0	0	0	0	0	1	1	1	1	1	2	2	3	4	5	6	7 10
4 50	0	0	0	0	0	1	1	1	1	1	2	2	3	4	5	6	7 0
5 0	0	0	0	0	1	1	1	1	1	1	2	2	3	4	5	6	6 30
5 30	0	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	6 0
6 0	0	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	6 0

Arg. Time after noon or mid.	Argument. Second Difference of the Moon's Place.															Arg. Time after noon or mid.
	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'				
0 ^h 0'	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	12 ^h 0'			
0 10	0	1	1	2	2	2	3	3	4	4	4	5	11 50			
0 20	1	2	2	3	4	5	6	6	7	8	9	10	11 40			
0 30	1	2	4	5	6	7	8	10	11	12	13	14	11 30			
0 40	2	3	5	6	8	9	11	13	14	16	17	19	11 20			
0 50	2	3	6	8	10	12	14	15	17	19	21	23	11 10			
1 0	2	4	7	9	11	14	16	18	21	23	25	27	11 0			
1 10	3	5	8	10	13	16	18	21	24	26	29	32	10 50			
1 20	3	6	9	12	15	18	21	24	27	30	33	36	10 40			
1 30	3	7	10	13	16	20	23	26	29	33	36	39	10 30			
1 40	4	7	11	14	18	21	25	29	32	36	39	43	10 20			
1 50	4	8	12	15	19	23	27	31	35	39	43	47	10 10			
2 0	4	8	12	17	21	25	29	33	37	42	46	50	10 0			
2 10	4	9	13	18	22	27	31	35	40	44	49	53	9 50			
2 20	5	9	14	19	23	28	33	38	42	47	52	56	9 40			
2 30	5	10	15	20	25	30	35	40	45	49	54	59	9 30			
2 40	5	10	16	21	26	31	36	41	47	52	57	62	9 20			
2 50	5	11	16	22	27	32	38	43	49	54	59	65	9 10			
3 0	6	11	17	22	28	34	39	45	51	56	62	67	9 0			
3 10	6	12	17	23	29	35	41	47	52	58	64	70	8 50			
3 20	6	12	18	24	30	36	42	48	54	60	66	72	8 40			
3 30	6	12	19	25	31	37	43	50	56	62	68	74	8 30			
3 40	6	13	19	25	32	38	45	51	57	64	70	76	8 20			
3 50	6	13	20	26	33	39	46	52	59	65	72	78	8 10			
4 0	7	13	20	27	33	40	47	53	60	67	73	80	8 0			
4 10	7	14	21	28	35	41	48	55	62	69	76	83	7 40			
4 20	7	14	21	28	36	43	50	57	64	71	78	86	7 30			
4 30	7	15	22	29	36	44	51	58	66	73	80	87	7 20			
4 40	7	15	22	30	37	45	52	60	67	74	82	89	7 10			
5 0	7	15	22	30	37	45	52	60	67	74	82	89	7 0			
5 30	7	15	22	30	37	45	52	60	67	74	82	89	6 30			
6 0	7	15	22	30	37	45	52	60	67	75	82	90	6 0			

ALTITUDE TO BE OBSERVED, IN ORDER TO ASCERTAIN THE APPARENT
TIME WITH THE GREATEST ACCURACY.

Arg. Lat.	Argument. Declination of the Sun or Star.															
	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°				
0°	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'	0° 0'
1	30 1	14 29	9 37	7 12	5 46	4 49	4 8	3 38	3 14	2 55	2 40	2 28				
2	90 0	30 1	19 30	14 31	11 36	9 40	8 18	7 17	6 29	5 52	5 21	4 55				
3	41 49	48 37	30 3	22 5	17 32	14 35	12 30	10 57	9 45	8 48	8 2	7 24				
4	30 1	90 0	41 52	30 5	23 41	19 36	16 45	14 40	13 3	11 46	10 44	9 53				
5	23 36	53 10	56 30	38 46	30 8	24 47	21 7	18 26	16 23	14 46	13 27	12 22				
6	19 30	41 52	90 0	48 40	40 9	30 11	25 36	22 17	19 46	17 48	16 12	14 53				
7	16 38	34 55	59 4	61 7	44 34	35 53	30 15	26 14	23 14	20 52	18 59	17 26				
8	14 31	30 5	48 41	90 0	53 16	42 1	35 7	30 20	26 46	24 1	21 48	20 1				
9	12 23	26 29	41 56	62 50	64 16	48 48	40 17	34 35	30 25	27 13	24 41	22 37				
10	11 35	23 41	37 0	53 17	90 0	56 38	45 52	39 3	34 11	30 30	27 37	25 16				
11	10 32	21 27	33 13	46 50	65 31	69 36	52 4	43 48	38 8	33 55	30 47	27 59				
12	9 40	19 36	30 11	42 2	56 39	90 0	59 15	48 58	42 17	37 26	33 42	30 44				
13	8 55	18 4	27 41	38 13	50 32	67 33	63 25	54 42	46 43	41 8	36 54	33 35				
14	8 18	16 45	25 36	35 7	45 53	59 15	90 0	61 22	51 31	45 1	40 13	36 30				
15	7 45	15 38	23 49	32 32	42 8	53 27	69 11	69 53	56 53	49 11	43 43	39 31				
16	7 16	14 40	22 17	30 20	39 4	48 59	61 23	90 0	63 6	50 12	47 22	42 39				
17	6 51	13 48	20 57	28 26	36 26	45 20	55 50	70 31	71 7	58 44	51 18	45 57				
18	6 29	13 3	19 46	26 46	34 11	42 17	51 32	63 8	90 0	64 37	55 34	49 26				
19	6 9	12 22	18 44	25 18	32 14	39 41	48 0	57 51	71 39	72 9	60 21	53 10				
20	5 51	11 46	17 48	24 1	30 31	37 27	45 2	53 43	64 40	90 0	65 54	57 13				
21	5 35	11 13	16 57	22 51	28 59	35 28	42 28	50 17	59 34	72 37	73 4	61 46				
22	5 21	10 44	16 12	21 49	27 37	33 43	40 14	47 22	55 35	65 56	90 0	67 5				
23	5 7	10 17	15 31	20 52	26 23	32 9	38 15	44 52	52 16	61 5	73 29	73 52				
24	4 55	9 53	14 53	20 1	25 17	30 45	36 30	42 40	49 27	57 15	67 6	90 0				
25	4 44	9 30	14 19	19 14	24 16	29 28	34 55	40 43	46 59	54 2	62 25	74 14				
26	4 34	9 9	13 48	18 31	23 21	28 19	33 30	38 58	44 50	51 18	58 44	68 7				
27	4 25	8 50	13 19	17 51	22 29	27 15	32 12	37 23	42 54	48 53	55 36	63 37				
28	4 16	8 33	12 52	17 15	21 43	26 17	31 1	35 57	41 10	46 47	52 57	60 3				
29	4 8	8 16	12 27	16 41	20 59	25 23	29 56	34 39	39 36	44 55	50 37	57 2				
30	4 0	8 1	12 4	16 10	20 19	24 34	28 56	33 57	38 11	43 10	48 32	54 26				
31	3 53	7 47	11 43	15 41	19 42	23 48	28 1	32 21	36 52	41 37	46 40	52 9				
32	3 47	7 34	11 23	15 14	19 8	23 6	27 10	31 20	35 41	40 12	45 0	50 8				
33	3 40	7 22	11 4	14 48	18 36	22 26	26 22	30 24	34 34	38 54	43 27	48 19				
34	3 35	7 10	10 46	14 25	18 8	21 50	25 38	29 32	33 33	37 43	42 4	46 40				
35	3 29	6 59	10 30	14 3	17 37	21 15	24 57	28 43	32 36	36 36	40 47	45 10				
36	3 24	6 49	10 15	13 42	17 11	20 43	24 18	27 58	31 43	35 35	39 86	43 48				
37	3 19	6 39	10 0	13 22	16 46	20 12	23 42	27 16	30 54	34 38	38 30	42 31				
38	3 15	6 31	9 47	13 4	16 23	19 44	23 9	26 36	30 8	33 45	37 29	41 22				
39	3 11	6 22	9 34	12 47	16 1	19 17	22 36	25 59	29 24	32 55	36 32	40 16				
40	3 7	6 14	9 21	12 30	15 40	18 52	22 7	25 24	28 44	32 9	35 39	39 15				
42	2 59	5 59	8 59	11 59	15 3	13 6	22 12	24 20	27 30	30 45	34 3	37 26				
44	2 53	5 46	8 39	11 33	14 29	17 25	20 23	23 23	26 25	29 30	32 38	35 50				
46	2 47	5 34	8 21	11 10	13 58	16 48	19 39	22 32	25 27	28 24	31 23	34 26				
48	2 41	5 23	8 5	10 48	13 31	16 15	19 0	21 46	24 34	27 27	30 16	33 11				
50	2 36	5 13	7 50	10 28	13 6	15 45	18 25	21 5	23 48	26 32	29 17	32 4				
52	2 32	5 5	7 37	10 11	12 44	15 18	17 53	20 29	23 6	25 44	28 23	31 5				
54	2 28	4 57	7 25	9 54	12 24	14 53	17 24	19 55	22 28	25 1	27 35	30 11				
56	2 25	4 50	7 14	9 40	12 6	14 32	16 58	19 25	21 53	24 22	26 52	29 29				
58	2 22	4 43	7 4	9 27	11 49	14 12	16 35	18 58	21 22	23 47	26 13	28 40				
60	2 19	4 37	6 56	9 15	11 34	13 54	16 15	18 33	20 54	23 16	25 38	28 1				
62	2 16	4 31	6 48	9 4	11 21	13 37	15 54	18 12	20 30	22 48	25 7	27 26				
64	2 14	4 27	6 41	8 53	11 9	13 23	15 37	17 53	20 7	22 22	24 38	26 54				
66	2 12	4 22	6 34	8 44	10 58	13 10	15 22	17 34	19 46	22 0	24 13	26 26				
68	2 9	4 19	6 28	8 37	10 48	12 58	15 8	17 18	19 28	21 39	23 50	26 1				
70	2 8	4 15	6 23	8 31	10 39	12 47	14 55	17 3	19 12	21 21	23 30	25 39				
72	2 6	4 12	6 19	8 25	10 31	12 38	14 44	16 51	18 54	21 5	23 12	25 19				
74	2 3	4 9	6 15	8 20	10 25	12 30	14 35	16 40	18 45	20 51	22 56	25 2				
76	2 4	4 7	6 11	8 15	10 19	12 23	14 27	16 30	18 34	20 39	22 43	24 47				
78	2 5	4 5	6 8	8 11	10 14	12 16	14 19	16 22	18 25	20 29	22 31	24 34				
80	2 2	4 4	6 5	8 8	10 10	12 11	14 14	16 15	18 17	20 20	22 22	24 24				

TABLE LIV.
HYPERBOLIC LOGARITHMS.

Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
1.00	0.0000000	1.60	0.4700036	2.20	0.7884574	2.80	1.0296194	3.40	1.2327754
1.01	0.0009503	1.61	0.4762342	2.21	0.7929925	2.81	1.0331845	3.41	1.2267123
1.02	0.0198026	1.62	0.4824261	2.22	0.7975072	2.82	1.0367369	3.42	1.2296406
1.03	0.0295588	1.63	0.4885800	2.23	0.8020016	2.83	1.0402767	3.43	1.2325603
1.04	0.0392207	1.64	0.4946962	2.24	0.8064759	2.84	1.0438041	3.44	1.2354715
1.05	0.0487902	1.65	0.5007753	2.25	0.8109302	2.85	1.0473190	3.45	1.2383742
1.06	0.0582689	1.66	0.5068176	2.26	0.8153648	2.86	1.0508217	3.46	1.2412686
1.07	0.0676586	1.67	0.5128236	2.27	0.8197798	2.87	1.0543121	3.47	1.2441546
1.08	0.0769610	1.68	0.5187938	2.28	0.8241754	2.88	1.0577903	3.48	1.2470323
1.09	0.0861777	1.69	0.5247285	2.29	0.8285518	2.89	1.0612565	3.49	1.2499017
1.10	0.0953102	1.70	0.5306283	2.30	0.8329091	2.90	1.0647107	3.50	1.2527630
1.11	0.1043600	1.71	0.5364934	2.31	0.8372475	2.91	1.0681531	3.51	1.2556160
1.12	0.1133287	1.72	0.5423243	2.32	0.8415672	2.92	1.0715836	3.52	1.2584610
1.13	0.1222176	1.73	0.5481214	2.33	0.8458683	2.93	1.0750024	3.53	1.2612979
1.14	0.1310283	1.74	0.5538851	2.34	0.8501509	2.94	1.0784096	3.54	1.2641267
1.15	0.1397619	1.75	0.5596158	2.35	0.8544153	2.95	1.0818052	3.55	1.2669476
1.16	0.1484200	1.76	0.5653138	2.36	0.8586616	2.96	1.0851893	3.56	1.2697605
1.17	0.1570037	1.77	0.5709795	2.37	0.8628899	2.97	1.0885619	3.57	1.2725656
1.18	0.1655144	1.78	0.5766134	2.38	0.8671005	2.98	1.0919233	3.58	1.2753628
1.19	0.1739593	1.79	0.5822156	2.39	0.8712933	2.99	1.0952734	3.59	1.2781522
1.20	0.1823216	1.80	0.5877867	2.40	0.8754687	3.00	1.0986123	3.60	1.2809338
1.21	0.1906204	1.81	0.5933268	2.41	0.8796267	3.01	1.1019401	3.61	1.2837078
1.22	0.1988509	1.82	0.5988365	2.42	0.8837675	3.02	1.1052568	3.62	1.2864740
1.23	0.2070142	1.83	0.6043160	2.43	0.8878913	3.03	1.1085626	3.63	1.2892326
1.24	0.2151114	1.84	0.6097656	2.44	0.8919980	3.04	1.1118575	3.64	1.2919837
1.25	0.2231436	1.85	0.6151856	2.45	0.8960880	3.05	1.1151416	3.65	1.2947272
1.26	0.2311117	1.86	0.6205765	2.46	0.9001613	3.06	1.1184149	3.66	1.2974631
1.27	0.2390169	1.87	0.6259384	2.47	0.9042182	3.07	1.1216776	3.67	1.3001917
1.28	0.2468601	1.88	0.6312718	2.48	0.9082586	3.08	1.1249226	3.68	1.3029128
1.29	0.2546422	1.89	0.6365768	2.49	0.9122927	3.09	1.1281711	3.69	1.3056265
1.30	0.2623543	1.90	0.6418539	2.50	0.9162907	3.10	1.1314021	3.70	1.3083328
1.31	0.2700271	1.91	0.6471032	2.51	0.9202828	3.11	1.1346227	3.71	1.3110319
1.32	0.2776317	1.92	0.6523252	2.52	0.9242589	3.12	1.1378330	3.72	1.3137237
1.33	0.2851789	1.93	0.6575200	2.53	0.9282193	3.13	1.1410330	3.73	1.3164082
1.34	0.2926696	1.94	0.6626880	2.54	0.9321641	3.14	1.1442228	3.74	1.3190856
1.35	0.3001046	1.95	0.6678294	2.55	0.9360934	3.15	1.1474025	3.75	1.3217558
1.36	0.3074847	1.96	0.6729445	2.56	0.9400073	3.16	1.1505720	3.76	1.3244190
1.37	0.3148107	1.97	0.6780335	2.57	0.9439059	3.17	1.1537316	3.77	1.3270750
1.38	0.3220835	1.98	0.6830968	2.58	0.9477894	3.18	1.1568812	3.78	1.3297240
1.39	0.3293037	1.99	0.6881346	2.59	0.9516579	3.19	1.1600209	3.79	1.3323660
1.40	0.3364722	2.00	0.6931472	2.60	0.9555114	3.20	1.1631508	3.80	1.3350011
1.41	0.3435897	2.01	0.6981347	2.61	0.9593502	3.21	1.1662709	3.81	1.3376292
1.42	0.3506569	2.02	0.7030975	2.62	0.9631743	3.22	1.1693814	3.82	1.3402504
1.43	0.3576745	2.03	0.7080358	2.63	0.9669838	3.23	1.1724821	3.83	1.3428648
1.44	0.3646431	2.04	0.7129498	2.64	0.9707789	3.24	1.1755733	3.84	1.3454724
1.45	0.3715636	2.05	0.7178393	2.65	0.9745596	3.25	1.1786550	3.85	1.3480731
1.46	0.3784364	2.06	0.7227060	2.66	0.9783261	3.26	1.1817272	3.86	1.3506672
1.47	0.3852624	2.07	0.7275486	2.67	0.9820785	3.27	1.1847900	3.87	1.3532545
1.48	0.3920421	2.08	0.7323679	2.68	0.9858168	3.28	1.1878434	3.88	1.3558352
1.49	0.3987761	2.09	0.7371641	2.69	0.9895412	3.29	1.1908876	3.89	1.3584092
1.50	0.4054651	2.10	0.7419373	2.70	0.9932518	3.30	1.1939225	3.90	1.3609766
1.51	0.4121097	2.11	0.7466879	2.71	0.9969486	3.31	1.1969482	3.91	1.3635374
1.52	0.4187103	2.12	0.7514161	2.72	1.0006319	3.32	1.1999648	3.92	1.3660917
1.53	0.4252677	2.13	0.7561220	2.73	1.0043016	3.33	1.2029723	3.93	1.3686394
1.54	0.4317824	2.14	0.7608058	2.74	1.0079579	3.34	1.2059708	3.94	1.3711807
1.55	0.4382549	2.15	0.7654678	2.75	1.0116009	3.35	1.2089603	3.95	1.3737158
1.56	0.4446858	2.16	0.7701082	2.76	1.0152307	3.36	1.2119410	3.96	1.3762440
1.57	0.4510756	2.17	0.7747272	2.77	1.0188473	3.37	1.2149127	3.97	1.3787661
1.58	0.4574248	2.18	0.7793249	2.78	1.0224509	3.38	1.2178757	3.98	1.3812818
1.59	0.4637340	2.19	0.7839015	2.79	1.0260416	3.39	1.2208299	3.99	1.3837912

TABLE LIV.
HYPERBOLIC LOGARITHMS.

yp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
.3862944	4.60	1.5260563	5.20	1.6486586	5.80	1.7578579	6.40	1.8562980
.3887912	4.61	1.5282278	5.21	1.6505799	5.81	1.7595806	6.41	1.8578593
.3912819	4.62	1.5303947	5.22	1.6524974	5.82	1.7613003	6.42	1.8594181
.3937664	4.63	1.5325569	5.23	1.6544113	5.83	1.7630170	6.43	1.8609745
.3962447	4.64	1.5347144	5.24	1.6563215	5.84	1.7647308	6.44	1.8625285
.3987169	4.65	1.5368672	5.25	1.6582281	5.85	1.7664416	6.45	1.8640801
.4011829	4.66	1.5390154	5.26	1.6601310	5.86	1.7681496	6.46	1.8656293
.4036429	4.67	1.5411591	5.27	1.6620304	5.87	1.7698546	6.47	1.8671761
.4060970	4.68	1.5432981	5.28	1.6639261	5.88	1.7715563	6.48	1.8687205
.4085450	4.69	1.5454326	5.29	1.6658182	5.89	1.7732560	6.49	1.8702625
1.4109870	4.70	1.5475625	5.30	1.6677068	5.90	1.7749524	6.50	1.8718022
1.4134330	4.71	1.5496879	5.31	1.6695918	5.91	1.7766458	6.51	1.8733395
1.4158532	4.72	1.5518083	5.32	1.6714733	5.92	1.7783364	6.52	1.8748744
1.4182774	4.73	1.5539252	5.33	1.6733512	5.93	1.7800242	6.53	1.8764069
1.4206958	4.74	1.5560371	5.34	1.6752257	5.94	1.7817091	6.54	1.8779372
1.4231083	4.75	1.5581446	5.35	1.6770966	5.95	1.7833912	6.55	1.8794650
1.4255151	4.76	1.5602476	5.36	1.6789640	5.96	1.7850705	6.56	1.8809906
1.4279160	4.77	1.5623463	5.37	1.6808279	5.97	1.7867469	6.57	1.8825138
1.4303112	4.78	1.5644405	5.38	1.6826884	5.98	1.7884206	6.58	1.8840347
1.4327007	4.79	1.5665303	5.39	1.6845454	5.99	1.7900914	6.59	1.8855533
1.4350845	4.80	1.5686159	5.40	1.6863990	6.00	1.7917595	6.60	1.8870696
1.4374626	4.81	1.5706971	5.41	1.6882491	6.01	1.7934247	6.61	1.8885836
1.4398351	4.82	1.5727759	5.42	1.6900958	6.02	1.7950873	6.62	1.8900954
1.4422020	4.83	1.5748465	5.43	1.6919391	6.03	1.7967470	6.63	1.8916048
1.4445633	4.84	1.5769147	5.44	1.6937791	6.04	1.7984040	6.64	1.8931120
1.4469190	4.85	1.5789787	5.45	1.6956156	6.05	1.8000583	6.65	1.8946169
1.4492692	4.86	1.5810384	5.46	1.6974488	6.06	1.8017098	6.66	1.8961195
1.4516138	4.87	1.5830939	5.47	1.6992786	6.07	1.8033586	6.67	1.8976198
1.4539530	4.88	1.5851452	5.48	1.7011051	6.08	1.8050047	6.68	1.8991180
1.4562868	4.89	1.5871923	5.49	1.7029283	6.09	1.8066481	6.69	1.9006139
1.4586150	4.90	1.5892352	5.50	1.7047481	6.10	1.8082888	6.70	1.9021075
1.4609379	4.91	1.5912739	5.51	1.7065646	6.11	1.8099268	6.71	1.9035990
1.4632554	4.92	1.5933085	5.52	1.7083779	6.12	1.8115621	6.72	1.9050882
1.4655675	4.93	1.5953390	5.53	1.7101878	6.13	1.8131947	6.73	1.9065751
1.4678743	4.94	1.5973653	5.54	1.7119945	6.14	1.8148247	6.74	1.9080599
1.4701758	4.95	1.5993876	5.55	1.7137979	6.15	1.8164521	6.75	1.9095425
1.4724721	4.96	1.6014057	5.56	1.7155981	6.16	1.8180768	6.76	1.9110229
1.4747630	4.97	1.6034198	5.57	1.7173951	6.17	1.8196988	6.77	1.9125011
1.4770487	4.98	1.6054299	5.58	1.7191888	6.18	1.8213183	6.78	1.9139771
1.4793292	4.99	1.6074359	5.59	1.7209793	6.19	1.8229351	6.79	1.9154509
1.4816045	5.00	1.6094379	5.60	1.7227666	6.20	1.8245493	6.80	1.9169226
1.4838747	5.01	1.6114359	5.61	1.7245507	6.21	1.8261609	6.81	1.9183921
1.4861397	5.02	1.6134299	5.62	1.7263317	6.22	1.8277699	6.82	1.9198595
1.4883996	5.03	1.6154200	5.63	1.7281094	6.23	1.8293763	6.83	1.9213247
1.4906544	5.04	1.6174061	5.64	1.7298841	6.24	1.8309802	6.84	1.9227877
1.4929041	5.05	1.6193883	5.65	1.7316555	6.25	1.8325815	6.85	1.9242487
1.4951488	5.06	1.6213665	5.66	1.7334239	6.26	1.8341802	6.86	1.9257074
1.4973884	5.07	1.6233408	5.67	1.7351891	6.27	1.8357764	6.87	1.9271641
1.4996230	5.08	1.6253113	5.68	1.7369512	6.28	1.8373700	6.88	1.9286187
1.5018527	5.09	1.6272778	5.69	1.7387102	6.29	1.8389611	6.89	1.9300711
1.5040774	5.10	1.6292403	5.70	1.7404662	6.30	1.8405496	6.90	1.9315214
1.5062971	5.11	1.6311994	5.71	1.7422190	6.31	1.8421357	6.91	1.9329696
1.5085120	5.12	1.6331544	5.72	1.7439689	6.32	1.8437192	6.92	1.9344158
1.5107219	5.13	1.6351057	5.73	1.7457155	6.33	1.8453002	6.93	1.9358598
1.5129370	5.14	1.6370531	5.74	1.7474593	6.34	1.8468788	6.94	1.9373018
1.5151372	5.15	1.6389967	5.75	1.7491998	6.35	1.8484548	6.95	1.9387417
1.5173228	5.16	1.6409366	5.76	1.7509375	6.36	1.8500284	6.96	1.9401795
1.5195132	5.17	1.6428727	5.77	1.7526721	6.37	1.8515995	6.97	1.9416152
1.5216990	5.18	1.6448051	5.78	1.7544037	6.38	1.8531681	6.98	1.9430489
1.5238800	5.19	1.6467337	5.79	1.7561323	6.39	1.8547343	6.99	1.9444695

TABLE LIV.
HYPERBOLIC LOGARITHMS.

Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
7.00	1.9459101	7.60	2.0281482	8.20	2.1041342	8.80	2.1747517	9.40	2.2407097
7.01	1.9473377	7.61	2.0294632	8.21	2.1053529	8.81	2.1758874	9.41	2.2417729
7.02	1.9487632	7.62	2.0307764	8.22	2.1065702	8.82	2.1770819	9.42	2.2428351
7.03	1.9501867	7.63	2.0320878	8.23	2.1077860	8.83	2.1781550	9.43	2.2438961
7.04	1.9516082	7.64	2.0333976	8.24	2.1090003	8.84	2.1792869	9.44	2.2449560
7.05	1.9530276	7.65	2.0347056	8.25	2.1102125	8.85	2.1804175	9.45	2.2460147
7.06	1.9544451	7.66	2.0360120	8.26	2.1114246	8.86	2.1815468	9.46	2.2470724
7.07	1.9558605	7.67	2.0373166	8.27	2.1126345	8.87	2.1826748	9.47	2.2481289
7.08	1.9572739	7.68	2.0386195	8.28	2.1138430	8.88	2.1838016	9.48	2.2491843
7.09	1.9586853	7.69	2.0399208	8.29	2.1150500	8.89	2.1849270	9.49	2.2502386
7.10	1.9600948	7.70	2.0412203	8.30	2.1162555	8.90	2.1860513	9.50	2.2512918
7.11	1.9615022	7.71	2.0425182	8.31	2.1174596	8.91	2.1871742	9.51	2.2523439
7.12	1.9629077	7.72	2.0438144	8.32	2.1186623	8.92	2.1882959	9.52	2.2533947
7.13	1.9643112	7.73	2.0451089	8.33	2.1198634	8.93	2.1894164	9.53	2.2544446
7.14	1.9657128	7.74	2.0464017	8.34	2.1210632	8.94	2.1905356	9.54	2.2554935
7.15	1.9671124	7.75	2.0476928	8.35	2.1222615	8.95	2.1916535	9.55	2.2565411
7.16	1.9685100	7.76	2.0489823	8.36	2.1234584	8.96	2.1927702	9.56	2.2575877
7.17	1.9699056	7.77	2.0502702	8.37	2.1246539	8.97	2.1938857	9.57	2.2586332
7.18	1.9712994	7.78	2.0515563	8.38	2.1258479	8.98	2.1949999	9.58	2.2596775
7.19	1.9726912	7.79	2.0528409	8.39	2.1270405	8.99	2.1961028	9.59	2.2607209
7.20	1.9740810	7.80	2.0541237	8.40	2.1282317	9.00	2.1972246	9.60	2.2617631
7.21	1.9754690	7.81	2.0554050	8.41	2.1294215	9.01	2.1983351	9.61	2.2628042
7.22	1.9768550	7.82	2.0566846	8.42	2.1306098	9.02	2.1994443	9.62	2.2638443
7.23	1.9782390	7.83	2.0579625	8.43	2.1317968	9.03	2.2005524	9.63	2.2648832
7.24	1.9796212	7.84	2.0592388	8.44	2.1329823	9.04	2.2016592	9.64	2.2659211
7.25	1.9810015	7.85	2.0605135	8.45	2.1341664	9.05	2.2027648	9.65	2.2669579
7.26	1.9823798	7.86	2.0617866	8.46	2.1353492	9.06	2.2038691	9.66	2.2679936
7.27	1.9837563	7.87	2.0630581	8.47	2.1365305	9.07	2.2049723	9.67	2.2690283
7.28	1.9851309	7.88	2.0643279	8.48	2.1377104	9.08	2.2060742	9.68	2.2700619
7.29	1.9865035	7.89	2.0655961	8.49	2.1388890	9.09	2.2071749	9.69	2.2710944
7.30	1.9878743	7.90	2.0668628	8.50	2.1400662	9.10	2.2082744	9.70	2.2721259
7.31	1.9892433	7.91	2.0681278	8.51	2.1412419	9.11	2.2093727	9.71	2.2731563
7.32	1.9906103	7.92	2.0693912	8.52	2.1424163	9.12	2.2104698	9.72	2.2741856
7.33	1.9919755	7.93	2.0706530	8.53	2.1435894	9.13	2.2115657	9.73	2.2752139
7.34	1.9933388	7.94	2.0719133	8.54	2.1447610	9.14	2.2126604	9.74	2.2762411
7.35	1.9947008	7.95	2.0731719	8.55	2.1459313	9.15	2.2137539	9.75	2.2772673
7.36	1.9960599	7.96	2.0744290	8.56	2.1471002	9.16	2.2148462	9.76	2.2782924
7.37	1.9974177	7.97	2.0756845	8.57	2.1482677	9.17	2.2159373	9.77	2.2793165
7.38	1.9987736	7.98	2.0769384	8.58	2.1494340	9.18	2.2170272	9.78	2.2803395
7.39	2.0001277	7.99	2.0781907	8.59	2.1505988	9.19	2.2181159	9.79	2.2813615
7.40	2.0014800	8.00	2.0794415	8.60	2.1517622	9.20	2.2192035	9.80	2.2823824
7.41	2.0028304	8.01	2.0806908	8.61	2.1529244	9.21	2.2202898	9.81	2.2834023
7.42	2.0041791	8.02	2.0819384	8.62	2.1540851	9.22	2.2213750	9.82	2.2844211
7.43	2.0055259	8.03	2.0831845	8.63	2.1552445	9.23	2.2224590	9.83	2.2854389
7.44	2.0068708	8.04	2.0844291	8.64	2.1564026	9.24	2.2235419	9.84	2.2864557
7.45	2.0082140	8.05	2.0856721	8.65	2.1575593	9.25	2.2246236	9.85	2.2874714
7.46	2.0095554	8.06	2.0869136	8.66	2.1587147	9.26	2.2257040	9.86	2.2884865
7.47	2.0108950	8.07	2.0881535	8.67	2.1598688	9.27	2.2267834	9.87	2.2894996
7.48	2.0122326	8.08	2.0893919	8.68	2.1610215	9.28	2.2278615	9.88	2.2905122
7.49	2.0135688	8.09	2.0906287	8.69	2.1621729	9.29	2.2289385	9.89	2.2915241
7.50	2.0149090	8.10	2.0918641	8.70	2.1633230	9.30	2.2300144	9.90	2.2925344
7.51	2.0162355	8.11	2.0930979	8.71	2.1644718	9.31	2.2310891	9.91	2.2935444
7.52	2.0175661	8.12	2.0943301	8.72	2.1656192	9.32	2.2321626	9.92	2.2945522
7.53	2.0188950	8.13	2.0955609	8.73	2.1667654	9.33	2.2332350	9.93	2.2955580
7.54	2.0202222	8.14	2.0967901	8.74	2.1679102	9.34	2.2343062	9.94	2.2965617
7.55	2.0215476	8.15	2.0980179	8.75	2.1690537	9.35	2.2353763	9.95	2.2975729
7.56	2.0228712	8.16	2.0992442	8.76	2.1701959	9.36	2.2364453	9.96	2.2985777
7.57	2.0241931	8.17	2.1004689	8.77	2.1713368	9.37	2.2375131	9.97	2.2995800
7.58	2.0255132	8.18	2.1016922	8.78	2.1724764	9.38	2.2385797	9.98	2.3005833
7.59	2.0268316	8.19	2.1029139	8.79	2.1736147	9.39	2.2396453	9.99	2.3015844

TABLE LIV.
HYPERBOLIC LOGARITHMS.

um.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
10	2.3025851	70	4.2484952	130	4.8675345	190	5.2470241	250	5.5214609
11	2.3978953	71	4.2626799	131	4.8751973	191	5.2529734	251	5.5254529
12	2.4849066	72	4.2766661	132	4.8828019	192	5.2574954	252	5.5294291
13	2.5649491	73	4.2904594	133	4.8903491	193	5.2626902	253	5.5333895
14	2.6390573	74	4.3040651	134	4.8978398	194	5.2678582	254	5.5373343
15	2.7080502	75	4.3174881	135	4.9052748	195	5.2729996	255	5.5412635
16	2.7725887	76	4.3307333	136	4.9126549	196	5.2781147	256	5.5451774
17	2.8332133	77	4.3438054	137	4.9199809	197	5.2832037	257	5.5490761
18	2.8903718	78	4.3567088	138	4.9272537	198	5.2882670	258	5.5529596
19	2.9444390	79	4.3694739	139	4.9344739	199	5.2933048	259	5.5568281
20	2.9957323	80	4.3820266	140	4.9416424	200	5.2983174	260	5.5606816
21	3.0445224	81	4.3941492	141	4.9487599	201	5.3033049	261	5.5645204
22	3.0910425	82	4.4067192	142	4.9558271	202	5.3082677	262	5.5683445
23	3.1354942	83	4.4188406	143	4.9628446	203	5.3132060	263	5.5721540
24	3.1780538	84	4.4308168	144	4.9698133	204	5.3181200	264	5.5759491
25	3.2188758	85	4.4426513	145	4.9767837	205	5.3230100	265	5.5797298
26	3.2580965	86	4.4543473	146	4.9836066	206	5.3278762	266	5.5834963
27	3.2958369	87	4.4659081	147	4.9904326	207	5.3327188	267	5.5872437
28	3.3322045	88	4.4773368	148	4.9972123	208	5.3375381	268	5.5909870
29	3.3672958	89	4.4886364	149	5.0039463	209	5.3423343	269	5.5947114
30	3.4011974	90	4.4998097	150	5.0106353	210	5.3471075	270	5.5984220
31	3.4339872	91	4.5108595	151	5.0172798	211	5.3518581	271	5.6021188
32	3.4657359	92	4.5217886	152	5.0238805	212	5.3565863	272	5.6058021
33	3.4965076	93	4.5325995	153	5.0304379	213	5.3612922	273	5.6094718
34	3.5263605	94	4.5432948	154	5.0369526	214	5.3659760	274	5.6131281
35	3.5553461	95	4.5538769	155	5.0434251	215	5.3706380	275	5.6167711
36	3.5835189	96	4.5643482	156	5.0498560	216	5.3752784	276	5.6204009
37	3.6109179	97	4.5747110	157	5.0562458	217	5.3798974	277	5.6240175
38	3.6375862	98	4.5849675	158	5.0625950	218	5.3844951	278	5.6276211
39	3.6635616	99	4.5951190	159	5.0689042	219	5.3890717	279	5.6312118
40	3.6888795	100	4.6051702	160	5.0751738	220	5.3936275	280	5.6347896
41	3.7135721	101	4.6151205	161	5.0814044	221	5.3981627	281	5.6383547
42	3.7376696	102	4.6249728	162	5.0875963	222	5.4026774	282	5.6419071
43	3.7612001	103	4.6347200	163	5.0937502	223	5.4071718	283	5.6454469
44	3.7841896	104	4.6443909	164	5.0998664	224	5.4116461	284	5.6489742
45	3.8066625	105	4.6539604	165	5.1059455	225	5.4161004	285	5.6524892
46	3.8286414	106	4.6634391	166	5.1119878	226	5.4205350	286	5.6559918
47	3.8501476	107	4.6728288	167	5.1179938	227	5.4249530	287	5.6594822
48	3.8712010	108	4.6821512	168	5.1239640	228	5.4293456	288	5.6629605
49	3.8918203	109	4.6913479	169	5.1298987	229	5.4337220	289	5.6664267
50	3.9120230	110	4.7004804	170	5.1357984	230	5.4380793	290	5.6698809
51	3.9318256	111	4.7095302	171	5.1416636	231	5.4424177	291	5.6733233
52	3.9512437	112	4.7184989	172	5.1474945	232	5.4467374	292	5.6767538
53	3.9702919	113	4.7273878	173	5.1532916	233	5.4510385	293	5.6801726
54	3.9889840	114	4.7361984	174	5.1590553	234	5.4553211	294	5.6835798
55	4.0073332	115	4.7449321	175	5.1647860	235	5.4595855	295	5.6869754
56	4.0253517	116	4.7535902	176	5.1704840	236	5.4638318	296	5.6903595
57	4.0430513	117	4.7621739	177	5.1761497	237	5.4680601	297	5.6937321
58	4.0604430	118	4.7706846	178	5.1817836	238	5.4722707	298	5.6970935
59	4.07775374	119	4.7791235	179	5.1873858	239	5.4764636	299	5.7004436
60	4.0943446	120	4.7874917	180	5.1929569	240	5.4806389	300	5.7037825
61	4.1108739	121	4.7957905	181	5.1984970	241	5.4847969	301	5.7071103
62	4.1271344	122	4.8040210	182	5.2040069	242	5.4889377	302	5.7104270
63	4.1431347	123	4.8121844	183	5.2094862	243	5.4930614	303	5.7137328
64	4.1588831	124	4.8202816	184	5.2149358	244	5.4971682	304	5.7170277
65	4.1743873	125	4.8283137	185	5.2203558	245	5.5012582	305	5.7203118
66	4.1896547	126	4.8362819	186	5.2257467	246	5.5053315	306	5.7235851
67	4.2046926	127	4.8441871	187	5.2311086	247	5.5093883	307	5.7268477
68	4.2195077	128	4.8520308	188	5.2364420	248	5.5134287	308	5.7300998
69	4.2341065	129	4.8598124	189	5.2417470	249	5.5174629	309	5.7333413

TABLE LIV.

HYPERBOLIC LOGARITHMS.

Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
310	5.7365723	370	5.9135030	430	6.0637852	490	6.1944054	550	6.3099183
311	5.7397929	371	5.9162021	431	6.0661081	491	6.1964441	551	6.3117348
312	5.7430032	372	5.9188939	432	6.0684256	492	6.1984787	552	6.3135480
313	5.7462032	373	5.9215784	433	6.0707377	493	6.2005092	553	6.3153580
314	5.7493930	374	5.9242538	434	6.0730445	494	6.2025355	554	6.3171647
315	5.7525736	375	5.9269230	435	6.0753460	495	6.2045578	555	6.3189681
316	5.7557422	376	5.9295891	436	6.0776422	496	6.2065739	556	6.3207683
317	5.7589018	377	5.9322452	437	6.0799382	497	6.2085900	557	6.3225632
318	5.7620514	378	5.9348942	438	6.0822189	498	6.2106001	558	6.3243593
319	5.7651911	379	5.9375362	439	6.0844994	499	6.2126061	559	6.3261495
320	5.7683210	380	5.9401713	440	6.0867747	500	6.2146081	560	6.3279363
321	5.7714411	381	5.9427994	441	6.0890449	501	6.2166061	561	6.3297209
322	5.7745515	382	5.9454206	442	6.0913099	502	6.2186001	562	6.3315018
323	5.7776523	383	5.9480350	443	6.0935698	503	6.2205902	563	6.3332796
324	5.7807435	384	5.9506426	444	6.0958246	504	6.2225763	564	6.3350543
325	5.7838232	385	5.9532433	445	6.0980743	505	6.2245581	565	6.3368257
326	5.7868974	386	5.9558374	446	6.1003190	506	6.2265367	566	6.3385941
327	5.7899602	387	5.9584247	447	6.1025536	507	6.2285110	567	6.3403593
328	5.7930136	388	5.9610053	448	6.1047932	508	6.2304814	568	6.3421214
329	5.7960578	389	5.9635793	449	6.1070229	509	6.2324480	569	6.3438804
330	5.7990927	390	5.9661467	450	6.1092476	510	6.2344107	570	6.3456364
331	5.8021184	391	5.9687076	451	6.1114673	511	6.2363696	571	6.3473892
332	5.8051950	392	5.9712618	452	6.1136822	512	6.2383246	572	6.3491390
333	5.8081425	393	5.9738096	453	6.1158991	513	6.2402758	573	6.3508857
334	5.8111410	394	5.9763509	454	6.1180972	514	6.2422233	574	6.3526294
335	5.8141305	395	5.9788858	455	6.1202974	515	6.2441669	575	6.3543700
336	5.8171112	396	5.9814142	456	6.1224928	516	6.2461068	576	6.3561077
337	5.8200829	397	5.9839363	457	6.1246834	517	6.2480429	577	6.3578423
338	5.8230459	398	5.9864520	458	6.1268692	518	6.2499752	578	6.3595739
339	5.8260001	399	5.9889614	459	6.1290502	519	6.2519039	579	6.3613025
340	5.8289456	400	5.9914645	460	6.1312265	520	6.2538288	580	6.3630281
341	5.8318825	401	5.9939614	461	6.1333980	521	6.2557500	581	6.3647503
342	5.8348107	402	5.9964521	462	6.1355649	522	6.2576676	582	6.3664704
343	5.8377304	403	5.9989366	463	6.1377271	523	6.2595815	583	6.3681872
344	5.8406417	404	6.0014149	464	6.1398846	524	6.2614917	584	6.3699010
345	5.8435444	405	6.0038871	465	6.1420374	525	6.2633983	585	6.3716118
346	5.8464388	406	6.0063532	466	6.1441856	526	6.2653012	586	6.3733198
347	5.8493248	407	6.0088132	467	6.1463293	527	6.2672005	587	6.3750248
348	5.8522025	408	6.0112672	468	6.1484683	528	6.2690963	588	6.3767269
349	5.8550719	409	6.0137152	469	6.1506028	529	6.2709884	589	6.3784262
350	5.8579332	410	6.0161572	470	6.1527327	530	6.2728770	590	6.3801225
351	5.8607862	411	6.0185932	471	6.1548581	531	6.2747620	591	6.3818160
352	5.8636312	412	6.0210233	472	6.1569790	532	6.2766435	592	6.3835066
353	5.8664681	413	6.0234476	473	6.1590954	533	6.2785214	593	6.3851944
354	5.8692969	414	6.0258660	474	6.1612073	534	6.2803958	594	6.3868793
355	5.8721178	415	6.0282785	475	6.1633148	535	6.2822667	595	6.3885614
356	5.8749307	416	6.0306853	476	6.1654179	536	6.2841342	596	6.3902407
357	5.8777358	417	6.0330862	477	6.1675165	537	6.2859981	597	6.3919171
358	5.8805330	418	6.0354814	478	6.1696100	538	6.2878586	598	6.3935908
359	5.8833224	419	6.0378709	479	6.1717006	539	6.2897156	599	6.3952616
360	5.8861040	420	6.0402547	480	6.1737861	540	6.2915691	600	6.3969297
361	5.8888788	421	6.0426323	481	6.1758673	541	6.2934193	601	6.3985949
362	5.8916442	422	6.0450053	482	6.1779441	542	6.2952660	602	6.4002574
363	5.8944028	423	6.0473722	483	6.1800167	543	6.2971093	603	6.4019172
364	5.8971539	424	6.0497335	484	6.1820849	544	6.2989492	604	6.4035742
365	5.8998974	425	6.0520892	485	6.1841489	545	6.3007850	605	6.4052285
366	5.9026333	426	6.0544493	486	6.1862086	546	6.3026190	606	6.4068800
367	5.9053618	427	6.0567840	487	6.1882641	547	6.3044488	607	6.4085288
368	5.9080829	428	6.0591232	488	6.1903154	548	6.3062753	608	6.4101749
369	5.9107966	429	6.0614569	489	6.1923625	549	6.3080984	609	6.4118183

TABLE LIV.
HYPERBOLIC LOGARITHMS.

Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
610	6.4194590	670	6.5072777	730	6.5930445	790	6.6720329	850	6.7452363
611	6.4150970	671	6.5087691	731	6.5944135	791	6.6732980	851	6.7464121
612	6.4167323	672	6.5102583	732	6.5957805	792	6.6745614	852	6.7475865
613	6.4183649	673	6.5117453	733	6.5971457	793	6.6758232	853	6.7487595
614	6.4199949	674	6.5132301	734	6.5985090	794	6.6770835	854	6.7499312
615	6.4216223	675	6.5147127	735	6.5998705	795	6.6783421	855	6.7511015
616	6.4232470	676	6.5161931	736	6.6012301	796	6.6795992	856	6.7522704
617	6.4248690	677	6.5176713	737	6.6025879	797	6.6808547	857	6.7534379
618	6.4264885	678	6.5191473	738	6.6039458	798	6.6821086	858	6.7546041
619	6.4281052	679	6.5206211	739	6.6052979	799	6.6833609	859	6.7557689
620	6.4297195	680	6.5220928	740	6.6066502	800	6.6846117	860	6.7569324
621	6.4313311	681	6.5235623	741	6.6080006	801	6.6858609	861	6.7580945
622	6.4329401	682	6.5250297	742	6.6093492	802	6.6871086	862	6.7592553
623	6.4345465	683	6.5264949	743	6.6106960	803	6.6883547	863	6.7604147
624	6.4361504	684	6.5279579	744	6.6120410	804	6.6895993	864	6.7615728
625	6.4377516	685	6.5294188	745	6.6133842	805	6.6908423	865	6.7627295
626	6.4393504	686	6.5308776	746	6.6147256	806	6.6920837	866	6.7638849
627	6.4409465	687	6.5323343	747	6.6160652	807	6.6933237	867	6.7650390
628	6.4425402	688	6.5337888	748	6.6174030	808	6.6945621	868	6.7661917
629	6.4441313	689	6.5352413	749	6.6187390	809	6.6957989	869	6.7673431
630	6.4457198	690	6.5366916	750	6.6200732	810	6.6970342	870	6.7684932
631	6.4473059	691	6.5381398	751	6.6214057	811	6.6982681	871	6.7696420
632	6.4488894	692	6.5395860	752	6.6227363	812	6.6995003	872	6.7707894
633	6.4504704	693	6.5410300	753	6.6240652	813	6.7007311	873	6.7719356
634	6.4520490	694	6.5424720	754	6.6253924	814	6.7019604	874	6.7730804
635	6.4536250	695	6.5439118	755	6.6267177	815	6.7031881	875	6.7742239
636	6.4551986	696	6.5453497	756	6.6280414	816	6.7044144	876	6.7753661
637	6.4567697	697	6.5467854	757	6.6293633	817	6.7056391	877	6.7765070
638	6.4583383	698	6.5482191	758	6.6306834	818	6.7068623	878	6.7776466
639	6.4599045	699	6.5496507	759	6.6320018	819	6.7080841	879	6.7787849
640	6.4614682	700	6.5510803	760	6.6333184	820	6.7093043	880	6.7799219
641	6.4630295	701	6.5525079	761	6.6346334	821	6.7105231	881	6.7810576
642	6.4645883	702	6.5539334	762	6.6359466	822	6.7117404	882	6.7821921
643	6.4661447	703	6.5553569	763	6.6372580	823	6.7129562	883	6.7833252
644	6.4676987	704	6.5567784	764	6.6385678	824	6.7141705	884	6.7844571
645	6.4692503	705	6.5581978	765	6.6398758	825	6.7153834	885	6.7855876
646	6.4707995	706	6.5596152	766	6.6411822	826	6.7165948	886	6.7867170
647	6.4723463	707	6.5610307	767	6.6424868	827	6.7178047	887	6.7878450
648	6.4738907	708	6.5624441	768	6.6437897	828	6.7190132	888	6.7889717
649	6.4754327	709	6.5638555	769	6.6450910	829	6.7202202	889	6.7900972
650	6.4769724	710	6.5652650	770	6.6463905	830	6.7214257	890	6.7912215
651	6.4785096	711	6.5666724	771	6.6476884	831	6.7226298	891	6.7923444
652	6.4800446	712	6.5680779	772	6.6489846	832	6.7238324	892	6.7934661
653	6.4815771	713	6.5694814	773	6.6502790	833	6.7250336	893	6.7945866
654	6.4831074	714	6.5708830	774	6.6515719	834	6.7262334	894	6.7957058
655	6.4846352	715	6.5722825	775	6.6528630	835	6.7274317	895	6.7968237
656	6.4861608	716	6.5736802	776	6.6541525	836	6.7286286	896	6.7979404
657	6.4876840	717	6.5750758	777	6.6554404	837	6.7298241	897	6.7990559
658	6.4892049	718	6.5764696	778	6.6567265	838	6.7310181	898	6.8001701
659	6.4907235	719	6.5778614	779	6.6580110	839	6.7322107	899	6.8012830
660	6.4922398	720	6.5792512	780	6.6592939	840	6.7334019	900	6.8023948
661	6.4937538	721	6.5806391	781	6.6605751	841	6.7345917	901	6.8035053
662	6.4952656	722	6.5820251	782	6.6618547	842	6.7357800	902	6.8046145
663	6.4967750	723	6.5834092	783	6.6631327	843	6.7369670	903	6.8057226
664	6.4982821	724	6.5847914	784	6.6644090	844	6.7381525	904	6.8068294
665	6.4997870	725	6.5861717	785	6.6656837	845	6.7393366	905	6.8079349
666	6.5012897	726	6.5875500	786	6.6669568	846	6.7405194	906	6.8090393
667	6.5027900	727	6.5889265	787	6.6682282	847	6.7417007	907	6.8101425
668	6.5042882	728	6.5903010	788	6.6694981	848	6.7428806	908	6.8112444
669	6.5057841	729	6.5916737	789	6.6707663	849	6.7440592	909	6.8123451

TABLE LIV.
HYPERBOLIC LOGARITHMS.

Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.	Num.	Hyp. Log.
910	6.8134446	934	6.8394764	958	6.8648478	982	6.8895913
911	6.8145429	935	6.8405465	959	6.8658911	983	6.8906091
912	6.8156400	936	6.8416155	960	6.8669333	984	6.8916259
913	6.8167359	937	6.8426833	961	6.8679744	985	6.8926416
914	6.8178306	938	6.8437499	962	6.8690145	986	6.8936564
915	6.8189241	939	6.8448155	963	6.8700594	987	6.8946700
916	6.8200164	940	6.8458799	964	6.8710913	988	6.8956827
917	6.8211075	941	6.8469431	965	6.8721281	989	6.8966943
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918	6.8221974	942	6.8480053	966	6.8731638	990	6.8977049
919	6.8232861	943	6.8490663	967	6.8741985	991	6.8987145
920	6.8243737	944	6.8501262	968	6.8752321	992	6.8997231
921	6.8254600	945	6.8511849	969	6.8762646	993	6.9007307
922	6.8265452	946	6.8522426	970	6.8772961	994	6.9017372
923	6.8276292	947	6.8532991	971	6.8783265	995	6.9027427
924	6.8287121	948	6.8543545	972	6.8793558	996	6.9037473
925	6.8297937	949	6.8554088	973	6.8803841	997	6.9047508
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926	6.8308742	950	6.8564620	974	6.8814113	998	6.9057533
927	6.8319536	951	6.8575141	975	6.8824375	999	6.9067548
928	6.8330317	952	6.8585650	976	6.8834626	1000	6.9077553
929	6.8341087	953	6.8596149	977	6.8844867	10000	9.2103404
930	6.8351846	954	6.8606637	978	6.8855097	100000	11.5129215
931	6.8362593	955	6.8617113	979	6.8865316	1000000	13.8155106
932	6.8373328	956	6.8627579	980	6.8875526	10000000	16.1180957
933	6.8384052	957	6.8638034	981	6.8885725	100000000	18.4206807

TABLE LV.
TO REDUCE COMMON, TO HYPERBOLIC LOGARITHMS;
AND CONVERSELY.

Com. log.	Hyp. Log.	Com. log.	Hyp. Log.	Com. log.	Hyp. Log.	Com. log.	Hyp. Log.
000	0.0000000	025	0.57564627	050	1.15129255	075	1.72693882
001	0.02302585	026	0.59867213	051	1.17431840	076	1.74996467
002	0.04605170	027	0.62169798	052	1.19734425	077	1.77299052
003	0.06907755	028	0.64472383	053	1.22037010	078	1.79601637
004	0.09210340	029	0.66774968	054	1.24339595	079	1.81904222
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005	0.11512925	030	0.69077553	055	1.26642180	080	1.84206807
006	0.13815510	031	0.71380138	056	1.28944766	081	1.86509392
007	0.16118096	032	0.73682723	057	1.31247351	082	1.88811977
008	0.18420681	033	0.75985308	058	1.33549936	083	1.91114562
009	0.20723266	034	0.78287893	059	1.35852521	084	1.93417147
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010	0.23025851	035	0.80590478	060	1.38155106	085	1.95719732
011	0.25328436	036	0.82893064	061	1.40457691	086	1.98022318
012	0.27631021	037	0.85195649	062	1.42760276	087	2.00324903
013	0.29933606	038	0.87498234	063	1.45062861	088	2.02627488
014	0.32236191	039	0.89800819	064	1.47365446	089	2.04930073
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015	0.34538776	040	0.92103404	065	1.49668031	090	2.07232658
016	0.36841362	041	0.94405989	066	1.51970617	091	2.09535243
017	0.39143947	042	0.96708574	067	1.54273202	092	2.11837828
018	0.41446532	043	0.99011159	068	1.56575787	093	2.14140413
019	0.43749117	044	1.01313744	069	1.58878372	094	2.16442998
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020	0.46051702	045	1.03616329	070	1.61180957	095	2.18745583
021	0.48354287	046	1.05918915	071	1.63483542	096	2.21048169
022	0.50656872	047	1.08221500	072	1.65786127	097	2.23350754
023	0.52959457	048	1.10524085	073	1.68088712	098	2.25653339
024	0.55262042	049	1.12826670	074	1.70391297	099	2.27955924

TO REDUCE COMMON, TO HYPERBOLIC LOGARITHMS;
AND CONVERSELY.

Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.
100	2.30258509	160	3.68413615	220	5.06568721	280	6.44723826	340	7.82878932
101	2.32561094	161	3.70716200	221	5.08871306	281	6.47026411	341	7.85181517
102	2.34863679	162	3.73018785	222	5.11173891	282	6.49328996	342	7.87484102
103	2.37166264	163	3.75321370	223	5.13476476	283	6.51631581	343	7.89786687
104	2.39468849	164	3.77623955	224	5.15779061	284	6.53934166	344	7.92089272
105	2.41771434	165	3.79926540	225	5.18081646	285	6.56236751	345	7.94391857
106	2.44074020	166	3.82229126	226	5.20384232	286	6.58539337	346	7.96694443
107	2.46376605	167	3.84531711	227	5.22686817	287	6.60841922	347	7.98997028
108	2.48679190	168	3.86834296	228	5.24989402	288	6.63144507	348	8.01299613
109	2.50981775	169	3.89136881	229	5.27291987	289	6.65447092	349	8.03602198
110	2.53284360	170	3.91439466	230	5.29594572	290	6.67749677	350	8.05904783
111	2.55586945	171	3.93742051	231	5.31897157	291	6.70052262	351	8.08207368
112	2.57889530	172	3.96044636	232	5.34199742	292	6.72354847	352	8.10509953
113	2.60192115	173	3.98347221	233	5.36502327	293	6.74657432	353	8.12812538
114	2.62494700	174	4.00649806	234	5.38804912	294	6.76960017	354	8.15115123
115	2.64797285	175	4.02952391	235	5.41107497	295	6.79262602	355	8.17417708
116	2.67099871	176	4.05254976	236	5.43410083	296	6.81565188	356	8.19720293
117	2.69402456	177	4.07557561	237	5.45712668	297	6.83867773	357	8.22022878
118	2.71705041	178	4.09860146	238	5.48015253	298	6.86170358	358	8.24325463
119	2.74007626	179	4.12162731	239	5.50317838	299	6.88472943	359	8.26628048
120	2.76310211	180	4.14465316	240	5.52620423	300	6.90775528	360	8.28930633
121	2.78612796	181	4.16767901	241	5.54923008	301	6.93078113	361	8.31233218
122	2.80915381	182	4.19070486	242	5.57225593	302	6.95380698	362	8.33535803
123	2.83217966	183	4.21373071	243	5.59528178	303	6.97683283	363	8.35838388
124	2.85520551	184	4.23675656	244	5.61830763	304	6.99985868	364	8.38140973
125	2.87823136	185	4.25978241	245	5.64133348	305	7.02288453	365	8.40443558
126	2.90125722	186	4.28280827	246	5.66435934	306	7.04591039	366	8.42746143
127	2.92428307	187	4.30583412	247	5.68738519	307	7.06893624	367	8.45048728
128	2.94730892	188	4.32885997	248	5.71041104	308	7.09196209	368	8.47351313
129	2.97033477	189	4.35188582	249	5.73343689	309	7.11498794	369	8.49653898
130	2.99336062	190	4.37491167	250	5.75646274	310	7.13801379	370	8.51956483
131	3.01638647	191	4.39793752	251	5.77948859	311	7.16103964	371	8.54259069
132	3.03941232	192	4.42096337	252	5.80251444	312	7.18406549	372	8.56561654
133	3.06243817	193	4.44398922	253	5.82554029	313	7.20709134	373	8.58864239
134	3.08546402	194	4.46701507	254	5.84856614	314	7.23011719	374	8.61166824
135	3.10848987	195	4.49004092	255	5.87159199	315	7.25314304	375	8.63469409
136	3.13151573	196	4.51306677	256	5.89461784	316	7.27616889	376	8.65771994
137	3.15454158	197	4.53609263	257	5.91764369	317	7.29919475	377	8.68074580
138	3.17756743	198	4.55911848	258	5.94066954	318	7.32222060	378	8.70377165
139	3.20059328	199	4.58214433	259	5.96369539	319	7.34524645	379	8.72679750
140	3.22361913	200	4.60517019	260	5.98672124	320	7.36827230	380	8.74982335
141	3.24664498	201	4.62819604	261	6.00974709	321	7.39129815	381	8.77284920
142	3.26967083	202	4.65122189	262	6.03277294	322	7.41432400	382	8.79587505
143	3.29269668	203	4.67424774	263	6.05579879	323	7.43734985	383	8.81890090
144	3.31572253	204	4.69727359	264	6.07882464	324	7.46037570	384	8.84192675
145	3.33874838	205	4.72029944	265	6.10185049	325	7.48340155	385	8.86495260
146	3.36177424	206	4.74332529	266	6.12487634	326	7.50642740	386	8.88797845
147	3.38480009	207	4.76635115	267	6.14790219	327	7.52945325	387	8.91100431
148	3.40782594	208	4.78937700	268	6.17092805	328	7.55247911	388	8.93403016
149	3.43085179	209	4.81240285	269	6.19395390	329	7.57550496	389	8.95705601
150	3.45387764	210	4.83542870	270	6.21697975	330	7.59853081	390	8.98008186
151	3.47690349	211	4.85845455	271	6.24000560	331	7.62155666	391	9.00310771
152	3.49992934	212	4.88148040	272	6.26303145	332	7.64458251	392	9.02613356
153	3.52295519	213	4.90450625	273	6.28605730	333	7.66760836	393	9.04915941
154	3.54598104	214	4.92753210	274	6.30908315	334	7.69063421	394	9.07218526
155	3.56900689	215	4.95055795	275	6.33210900	335	7.71366006	395	9.09521111
156	3.59203275	216	4.97358381	276	6.35513486	336	7.73668592	396	9.11823697
157	3.61505860	217	4.99660966	277	6.37816071	337	7.75971177	397	9.14126282
158	3.63808445	218	5.01963551	278	6.40118656	338	7.78273762	398	9.16428867
159	3.66111030	219	5.04266136	279	6.42421241	339	7.80576347	399	9.18731452

TABLE LV.

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TO REDUCE COMMON, TO HYPERBOLIC LOGARITHMS;
AND CONVERSELY.

Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.
400	9.21084037	460	10.59189142	520	11.97344248	580	13.35499354	640	14.73654460
401	9.23336622	461	10.61491727	521	11.99646833	581	13.37801939	641	14.75957045
402	9.25639207	462	10.63794312	522	12.01949418	582	13.40104524	642	14.78259630
403	9.27941792	463	10.66096897	523	12.04252003	583	13.42407109	643	14.80562215
404	9.30244377	464	10.68399482	524	12.06554588	584	13.44709694	644	14.82864800
405	9.32546962	465	10.70702067	525	12.08857173	585	13.47012279	645	14.85167385
406	9.34849548	466	10.73004653	526	12.11159759	586	13.49314865	646	14.87469971
407	9.37152133	467	10.75307238	527	12.13462344	587	13.51617450	647	14.89772556
408	9.39454718	468	10.77609823	528	12.15764929	588	13.53920035	648	14.92075141
409	9.41757303	469	10.79912408	529	12.18067514	589	13.56222620	649	14.94377726
410	9.44059888	470	10.82214993	530	12.20370099	590	13.58525205	650	14.96680311
411	9.46362473	471	10.84517578	531	12.22672684	591	13.60827790	651	14.98982896
412	9.48665058	472	10.86820163	532	12.24975269	592	13.63130375	652	15.01285481
413	9.50967643	473	10.89122748	533	12.27277854	593	13.65432960	653	15.03588066
414	9.53270228	474	10.91425333	534	12.29580439	594	13.67735545	654	15.05890651
415	9.55572813	475	10.93727918	535	12.31883024	595	13.70038130	655	15.08193236
416	9.57875398	476	10.96030504	536	12.34185610	596	13.72340716	656	15.10495821
417	9.60177984	477	10.98333089	537	12.36488195	597	13.74643301	657	15.12798406
418	9.62480569	478	11.00635674	538	12.38790780	598	13.76945886	658	15.15100991
419	9.64783154	479	11.02938259	539	12.41093365	599	13.79248471	659	15.17403576
420	9.67085739	480	11.05240844	540	12.43395950	600	13.81551056	660	15.19706161
421	9.69388324	481	11.07543429	541	12.45698535	601	13.83853641	661	15.22008746
422	9.71690909	482	11.09846014	542	12.48001120	602	13.86156226	662	15.24311331
423	9.73993494	483	11.12148599	543	12.50303705	603	13.88458811	663	15.26613916
424	9.76296079	484	11.14451184	544	12.52606290	604	13.90761396	664	15.28916501
425	9.78598664	485	11.16753769	545	12.54908875	605	13.93063981	665	15.31219086
426	9.80901250	486	11.19056355	546	12.57211461	606	13.95366566	666	15.33521672
427	9.83203835	487	11.21358940	547	12.59514046	607	13.97669152	667	15.35824257
428	9.85506420	488	11.23661525	548	12.61816631	608	13.99971737	668	15.38126842
429	9.87809005	489	11.25964110	549	12.64119216	609	14.02274322	669	15.40429427
430	9.90111590	490	11.28266695	550	12.66421801	610	14.04576907	670	15.42732012
431	9.92414175	491	11.30569280	551	12.68724386	611	14.06879492	671	15.45034597
432	9.94716760	492	11.32871865	552	12.71026971	612	14.09182077	672	15.47337182
433	9.97019345	493	11.35174450	553	12.73329556	613	14.11484662	673	15.49639767
434	9.99321930	494	11.37477035	554	12.75632141	614	14.13787247	674	15.51942352
435	10.01624515	495	11.39779620	555	12.77934726	615	14.16089832	675	15.54244937
436	10.03927101	496	11.42082206	556	12.80237312	616	14.18392418	676	15.56547523
437	10.06229686	497	11.44384791	557	12.82539897	617	14.20695003	677	15.58850108
438	10.08532271	498	11.46687376	558	12.84842482	618	14.22997588	678	15.61152693
439	10.10834856	499	11.48989961	559	12.87145067	619	14.25300173	679	15.63455278
440	10.13137441	500	11.51292546	560	12.89447652	620	14.27602758	680	15.65757863
441	10.15440026	501	11.53595131	561	12.91750237	621	14.29905343	681	15.68060448
442	10.17742611	502	11.55897716	562	12.94052822	622	14.32207928	682	15.70363033
443	10.20045196	503	11.58200301	563	12.96355407	623	14.34510513	683	15.72665618
444	10.22347781	504	11.60502886	564	12.98657992	624	14.36813098	684	15.74968203
445	10.24650366	505	11.62805471	565	13.00960577	625	14.39115683	685	15.77270788
446	10.26952952	506	11.65108056	566	13.03263162	626	14.41418269	686	15.79573374
447	10.29255537	507	11.67410642	567	13.05565748	627	14.43720854	687	15.81875959
448	10.31558122	508	11.69713227	568	13.07868333	628	14.46023439	688	15.84178544
449	10.33860707	509	11.72015812	569	13.10170918	629	14.48326024	689	15.86481129
450	10.36163292	510	11.74318397	570	13.12473503	630	14.50628609	690	15.88783714
451	10.38465877	511	11.76620982	571	13.14776088	631	14.52931194	691	15.91086299
452	10.40768462	512	11.78923567	572	13.17078673	632	14.55233779	692	15.93388884
453	10.43071047	513	11.81226152	573	13.19381258	633	14.57536364	693	15.95691469
454	10.45373632	514	11.83528737	574	13.21683843	634	14.59838949	694	15.97994054
455	10.47676217	515	11.85831322	575	13.23986428	635	14.62141534	695	16.00296639
456	10.49978802	516	11.88133908	576	13.26289014	636	14.64444120	696	16.02599225
457	10.52281387	517	11.90436493	577	13.28591599	637	14.66746705	697	16.04901810
458	10.54583972	518	11.92739078	578	13.30894184	638	14.69049290	698	16.07204395
459	10.56886557	519	11.95041663	579	13.33196769	639	14.71351875	699	16.09506980

TO REDUCE COMMON, TO HYPERBOLIC LOGARITHMS;
AND CONVERSELY.

Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.	Com. Log.	Hyp. Log.
700	16.11809565	760	17.49964670	820	18.88113776	880	20.26274882	940	21.64429988
701	16.14112150	761	17.52267255	821	18.90422361	881	20.28577467	941	21.66732573
702	16.16414735	762	17.54569840	822	18.92724946	882	20.30880052	942	21.69035158
703	16.18717320	763	17.56872425	823	18.95027531	883	20.33182637	943	21.71337743
704	16.21019905	764	17.59175010	824	18.97330116	884	20.35485222	944	21.73640328
705	16.23322490	765	17.61477595	825	18.99632701	885	20.37787808	945	21.75942913
706	16.25625076	766	17.63780180	826	19.01935287	886	20.40090393	946	21.78245499
707	16.27927661	767	17.66082766	827	19.04237872	887	20.42392978	947	21.80548084
708	16.30230246	768	17.68385351	828	19.06540457	888	20.44695563	948	21.82850669
709	16.32532831	769	17.70687936	829	19.08843042	889	20.46998148	949	21.85153254
710	16.34835416	770	17.72990521	830	19.11145627	890	20.49300733	950	21.87455839
711	16.37138001	771	17.75293106	831	19.13448212	891	20.51603318	951	21.89758424
712	16.39440586	772	17.77595691	832	19.15750797	892	20.53905903	952	21.92061009
713	16.41743171	773	17.79898276	833	19.18053382	893	20.56208488	953	21.94363594
714	16.44045756	774	17.82200861	834	19.20355967	894	20.58511073	954	21.96666179
715	16.46348341	775	17.84503446	835	19.22658552	895	20.60813658	955	21.98968764
716	16.48650927	776	17.86806032	836	19.24961138	896	20.63116244	956	22.01271349
717	16.50953512	777	17.89108617	837	19.27263723	897	20.65418829	957	22.03573934
718	16.53256097	778	17.91411202	838	19.29566308	898	20.67721414	958	22.05876519
719	16.55558682	779	17.93713787	839	19.31868893	899	20.70023999	959	22.08179104
720	16.57861267	780	17.96016372	840	19.34171478	900	20.72326584	960	22.10481689
721	16.60163852	781	17.98318957	841	19.36474063	901	20.74629169	961	22.12784274
722	16.62466437	782	18.00621542	842	19.38776648	902	20.76931754	962	22.15086859
723	16.64769022	783	18.02924127	843	19.41079233	903	20.79234339	963	22.17389444
724	16.67071607	784	18.05226712	844	19.43381818	904	20.81536924	964	22.19692029
725	16.69374192	785	18.07529297	845	19.45684403	905	20.83839509	965	22.21994614
726	16.71676777	786	18.09831883	846	19.47986988	906	20.86142095	966	22.24297200
727	16.73979362	787	18.12134468	847	19.50289574	907	20.88444680	967	22.26599785
728	16.76281948	788	18.14437053	848	19.52592159	908	20.90747265	968	22.28902370
729	16.78584533	789	18.16739638	849	19.54894744	909	20.93049850	969	22.31204955
730	16.80887118	790	18.19042223	850	19.57197329	910	20.95352435	970	22.33507540
731	16.83189703	791	18.21344808	851	19.59499914	911	20.97655020	971	22.35810125
732	16.85492288	792	18.23647393	852	19.61802499	912	20.99957605	972	22.38112710
733	16.87794873	793	18.25949978	853	19.64105084	913	21.02260190	973	22.40415295
734	16.90097458	794	18.28252563	854	19.66407669	914	21.04562775	974	22.42717880
735	16.92400043	795	18.30555148	855	19.68710254	915	21.06865360	975	22.45020465
736	16.94702628	796	18.32857733	856	19.71012840	916	21.09167946	976	22.47323051
737	16.97005214	797	18.35160319	857	19.73315425	917	21.11470531	977	22.49625636
738	16.99307799	798	18.37462904	858	19.75618010	918	21.13773116	978	22.51928221
739	16.01610384	799	18.39765489	859	19.77920595	919	21.16075701	979	22.54230806
740	17.03912969	800	18.42068074	860	19.80223180	920	21.18378286	980	22.56533391
741	17.06215554	801	18.44370659	861	19.82525765	921	21.20680871	981	22.58835976
742	17.08518139	802	18.46673244	862	19.84828350	922	21.22983456	982	22.61138561
743	17.10820724	803	18.48975829	863	19.87130935	923	21.25286041	983	22.63441146
744	17.13123309	804	18.51278414	864	19.89433520	924	21.27588626	984	22.65743731
745	17.15425894	805	18.53580999	865	19.91736105	925	21.29891211	985	22.68046316
746	17.17728480	806	18.55883585	866	19.94038691	926	21.32193797	986	22.70348902
747	17.20031065	807	18.58186170	867	19.96341276	927	21.34496382	987	22.72651487
748	17.22333650	808	18.60488755	868	19.98643861	928	21.36798967	988	22.74954072
749	17.24636235	809	18.62791340	869	20.00946446	929	21.39101552	989	22.77256657
750	17.26938820	810	18.65093925	870	20.03249031	930	21.41404137	990	22.79559242
751	17.29241405	811	18.67396510	871	20.05551616	931	21.43706722	991	22.81861827
752	17.31543990	812	18.69699095	872	20.07854201	932	21.46009307	992	22.84164412
753	17.33846575	813	18.72001680	873	20.10156786	933	21.48311892	993	22.86466997
754	17.36149160	814	18.74304265	874	20.12459371	934	21.50614477	994	22.88769582
755	17.38451745	815	18.76606850	875	20.14761956	935	21.52917062	995	22.91072167
756	17.40754330	816	18.78909435	876	20.17064542	936	21.55219648	996	22.93374753
757	17.43056915	817	18.81212021	877	20.19367127	937	21.57522233	997	22.95677338
758	17.45359500	818	18.83514606	878	20.21669712	938	21.59824818	998	22.97979923
759	17.47662085	819	18.85817191	879	20.23972297	939	21.62127403	999	23.00282508

TABLE LVI.

LENGTHS OF CIRCULAR ARCHES.

Deg.	Arch.	Deg.	Arch.	Deg.	Arch.	Min.	Arch.	Sec.	Arch.	Third	Arch.
1	0.0174533	61	1.0646508	121	2.1118483	1	2909	1	48	1	1
2	0.0349066	62	1.0821041	122	2.1293016	2	5818	2	97	2	2
3	0.0523599	63	1.0995574	123	2.1467549	3	8727	3	145	3	2
4	0.0698132	64	1.1170107	124	2.1642082	4	11636	4	194	4	3
5	0.0872665	65	1.1344640	125	2.1816615	5	14544	5	242	5	4
6	0.1047198	66	1.1519173	126	2.1991148	6	17453	6	291	6	5
7	0.1221730	67	1.1693706	127	2.2165681	7	20362	7	339	7	6
8	0.1396263	68	1.1868239	128	2.2340214	8	23271	8	388	8	6
9	0.1570796	69	1.2042772	129	2.2514747	9	26180	9	436	9	7
10	0.1745329	70	1.2217305	130	2.2689280	10	29089	10	485	10	8
11	0.1919862	71	1.2391838	131	2.2863813	11	31998	11	533	11	9
12	0.2094395	72	1.2566371	132	2.3038346	12	34907	12	582	12	10
13	0.2268928	73	1.2740904	133	2.3212879	13	37815	13	630	13	11
14	0.2443461	74	1.2915436	134	2.3387412	14	40724	14	679	14	11
15	0.2617994	75	1.3089969	135	2.3561945	15	43633	15	727	15	12
16	0.2792527	76	1.3264502	136	2.3736478	16	46542	16	776	16	13
17	0.2967060	77	1.3439035	137	2.3911010	17	49451	17	824	17	14
18	0.3141593	78	1.3613568	138	2.4085543	18	52360	18	873	18	15
19	0.3316126	79	1.3788101	139	2.4260076	19	55269	19	921	19	15
20	0.3490659	80	1.3962634	140	2.4434609	20	58178	20	970	20	16
21	0.3665191	81	1.4137167	141	2.4609142	21	61087	21	1018	21	17
22	0.3839724	82	1.4311700	142	2.4783675	22	63995	22	1067	22	18
23	0.4014257	83	1.4486233	143	2.4958208	23	66904	23	1115	23	19
24	0.4188790	84	1.4660766	144	2.5132741	24	69813	24	1164	24	19
25	0.4363323	85	1.4835299	145	2.5307274	25	72722	25	1212	25	20
26	0.4537856	86	1.5009832	146	2.5481807	26	75631	26	1261	26	21
27	0.4712389	87	1.5184365	147	2.5656339	27	78540	27	1309	27	22
28	0.4886922	88	1.5358897	148	2.5830872	28	81449	28	1357	28	23
29	0.5061455	89	1.5533430	149	2.6005405	29	84358	29	1406	29	23
30	0.5235988	90	1.5707963	150	2.6179938	30	87266	30	1454	30	24
31	0.5410521	91	1.5882496	151	2.6354471	31	90175	31	1503	31	25
32	0.5585054	92	1.6057029	152	2.6529004	32	93084	32	1551	32	26
33	0.5759587	93	1.6231562	153	2.6703537	33	95993	33	1599	33	27
34	0.5934119	94	1.6406095	154	2.6878070	34	98902	34	1648	34	27
35	0.6108652	95	1.6580628	155	2.7052603	35	101811	35	1697	35	28
36	0.6283185	96	1.6755161	156	2.7227136	36	104720	36	1745	36	29
37	0.6457718	97	1.6929693	157	2.7401668	37	107629	37	1794	37	30
38	0.6632251	98	1.7104226	158	2.7576201	38	110538	38	1842	38	31
39	0.6806784	99	1.7278759	159	2.7750734	39	113446	39	1891	39	32
40	0.6981317	100	1.7453292	160	2.7925267	40	116355	40	1939	40	32
41	0.7155850	101	1.7627825	161	2.8099800	41	119264	41	1988	41	33
42	0.7330383	102	1.7802358	162	2.8274333	42	122173	42	2036	42	34
43	0.7504916	103	1.7976891	163	2.8448866	43	125082	43	2085	43	35
44	0.7679449	104	1.8151424	164	2.8623399	44	127991	44	2133	44	36
45	0.7853982	105	1.8325957	165	2.8797932	45	130900	45	2182	45	36
46	0.8028515	106	1.8500490	166	2.8972465	46	133809	46	2230	46	37
47	0.8203047	107	1.8675022	167	2.9146997	47	136717	47	2279	47	38
48	0.8377580	108	1.8849555	168	2.9321530	48	139626	48	2327	48	39
49	0.8552113	109	1.9024088	169	2.9496063	49	142535	49	2376	49	40
50	0.8726646	110	1.9198621	170	2.9670596	50	145444	50	2424	50	40
51	0.8901179	111	1.9373154	171	2.9845129	51	148353	51	2473	51	41
52	0.9075712	112	1.9547687	172	3.0019662	52	151262	52	2521	52	42
53	0.9250245	113	1.9722220	173	3.0194195	53	154171	53	2570	53	43
54	0.9424778	114	1.9896753	174	3.0368728	54	157080	54	2618	54	44
55	0.9599311	115	2.0071286	175	3.0543261	55	159989	55	2666	55	44
56	0.9773844	116	2.0245819	176	3.0717794	56	162897	56	2715	56	45
57	0.9948377	117	2.0420352	177	3.0892327	57	165806	57	2763	57	46
58	1.0122910	118	2.0594885	178	3.1066860	58	168715	58	2812	58	47
59	1.0297443	119	2.0769418	179	3.1241393	59	171624	59	2860	59	48
60	1.0471976	120	2.0943950	180	3.1415926	60	174533	60	2909	60	48

TABLE LVII.
RECIPROCAL OF NUMBERS.

Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.
1	1.0	61	0.0163934	121	0.0082645	181	0.0055249	241	0.0041494
2	0.5	62	0.0161290	122	0.0081967	182	0.0054945	242	0.0041322
3	0.3333333	63	0.0158730	123	0.0081300	183	0.0054645	243	0.0041152
4	0.25	64	0.015625	124	0.0080645	184	0.0054348	244	0.0040984
5	0.2	65	0.0153846	125	0.008	185	0.0054054	245	0.0040816
6	0.1666666	66	0.0151515	126	0.0079365	186	0.0053763	246	0.004065
7	0.1428571	67	0.0149254	127	0.0078740	187	0.0053476	247	0.0040486
8	0.125	68	0.0147059	128	0.0078125	188	0.0053191	248	0.0040323
9	0.1111111	69	0.0144928	129	0.0077519	189	0.0052910	249	0.0040161
10	0.1	70	0.0142857	130	0.0076923	190	0.0052632	250	0.004
11	0.0909090	71	0.0140845	131	0.0076336	191	0.0052356	251	0.0039841
12	0.0833333	72	0.0138888	132	0.0075757	192	0.0052083	252	0.0039683
13	0.0769230	73	0.0136986	133	0.0075188	193	0.0051813	253	0.0039526
14	0.0714285	74	0.0135135	134	0.0074627	194	0.0051546	254	0.0039370
15	0.0666666	75	0.0133333	135	0.0074074	195	0.0051282	255	0.0039216
16	0.0625	76	0.0131579	136	0.0073529	196	0.0051020	256	0.0039063
17	0.0588235	77	0.0129870	137	0.0072993	197	0.0050761	257	0.0038911
18	0.0555555	78	0.0128205	138	0.0072464	198	0.0050505	258	0.0038760
19	0.0526316	79	0.0126582	139	0.0071942	199	0.0050251	259	0.0038610
20	0.05	80	0.0125	140	0.0071429	200	0.005	260	0.0038462
21	0.0476190	81	0.0123457	141	0.0070922	201	0.0049751	261	0.0038314
22	0.0454545	82	0.0121950	142	0.0070423	202	0.0049504	262	0.0038168
23	0.0434783	83	0.0120482	143	0.0069930	203	0.0049261	263	0.0038023
24	0.0416666	84	0.0119048	144	0.0069444	204	0.0049020	264	0.0037878
25	0.04	85	0.0117647	145	0.0068966	205	0.0048780	265	0.0037736
26	0.0384615	86	0.0116279	146	0.0068493	206	0.0048544	266	0.0037594
27	0.0370370	87	0.0114943	147	0.0068027	207	0.0048309	267	0.0037453
28	0.0357143	88	0.0113636	148	0.0067567	208	0.0048077	268	0.0037313
29	0.0344828	89	0.0112360	149	0.0067114	209	0.0047847	269	0.0037175
30	0.0333333	90	0.0111111	150	0.0066666	210	0.0047619	270	0.0037037
31	0.0322581	91	0.0109890	151	0.0066225	211	0.0047393	271	0.0036900
32	0.03125	92	0.0108696	152	0.0065789	212	0.0047170	272	0.0036765
33	0.0303030	93	0.0107527	153	0.0065359	213	0.0046948	273	0.0036630
34	0.0294118	94	0.0106383	154	0.0064935	214	0.0046723	274	0.0036496
35	0.0285714	95	0.0105263	155	0.0064516	215	0.0046502	275	0.0036363
36	0.0277777	96	0.0104166	156	0.0064103	216	0.0046286	276	0.0036232
37	0.0270270	97	0.0103093	157	0.0063694	217	0.0046083	277	0.0036101
38	0.0263158	98	0.0102041	158	0.0063291	218	0.0045872	278	0.0035971
39	0.0256410	99	0.0101010	159	0.0062893	219	0.0045662	279	0.0035842
40	0.025	100	0.01	160	0.00625	220	0.0045454	280	0.0035714
41	0.0243902	101	0.0099909	161	0.0062112	221	0.0045249	281	0.0035587
42	0.0238095	102	0.0098039	162	0.0061728	222	0.0045045	282	0.0035461
43	0.0232558	103	0.0097087	163	0.0061350	223	0.0044843	283	0.0035336
44	0.0227272	104	0.0096154	164	0.0060975	224	0.0044643	284	0.0035211
45	0.0222222	105	0.0095238	165	0.0060606	225	0.0044444	285	0.0035088
46	0.0217391	106	0.0094340	166	0.0060241	226	0.0044248	286	0.0034965
47	0.0212766	107	0.0093458	167	0.0059889	227	0.0044053	287	0.0034843
48	0.0208333	108	0.0092592	168	0.0059524	228	0.0043860	288	0.0034722
49	0.0204082	109	0.0091743	169	0.0059172	229	0.0043668	289	0.0034602
50	0.02	110	0.0090909	170	0.0058824	230	0.0043478	290	0.0034483
51	0.0196078	111	0.0090090	171	0.0058480	231	0.0043290	291	0.0034364
52	0.0192308	112	0.0089286	172	0.0058140	232	0.0043103	292	0.0034246
53	0.0188679	113	0.0088496	173	0.0057803	233	0.0042918	293	0.0034130
54	0.0185185	114	0.0087719	174	0.0057471	234	0.0042735	294	0.0034014
55	0.0181818	115	0.0086957	175	0.0057143	235	0.0042553	295	0.0033898
56	0.0178571	116	0.0086207	176	0.0056818	236	0.0042373	296	0.0033783
57	0.0175439	117	0.0085470	177	0.0056497	237	0.0042194	297	0.0033667
58	0.0172414	118	0.0084745	178	0.0056180	238	0.0042017	298	0.0033557
59	0.0169490	119	0.0084034	179	0.0055866	239	0.0041841	299	0.0033445
60	0.0166666	120	0.0083333	180	0.0055555	240	0.0041666	300	0.0033333

TABLE LVII.
RECIPROCAL OF NUMBERS.

Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.
301	0.0039223	361	0.0027701	421	0.0023753	481	0.0020790	541	0.0018484
302	0.0039113	362	0.0027624	422	0.0023697	482	0.0020747	542	0.0018450
303	0.0039003	363	0.0027548	423	0.0023641	483	0.0020704	543	0.0018416
304	0.0038895	364	0.0027473	424	0.0023585	484	0.0020661	544	0.0018382
305	0.0038787	365	0.0027397	425	0.0023529	485	0.0020619	545	0.0018349
306	0.0038680	366	0.0027322	426	0.0023474	486	0.0020576	546	0.0018315
307	0.0038573	367	0.0027248	427	0.0023419	487	0.0020534	547	0.0018282
308	0.0038468	368	0.0027174	428	0.0023364	488	0.0020492	548	0.0018248
309	0.0038362	369	0.0027100	429	0.0023310	489	0.0020450	549	0.0018215
310	0.0038258	370	0.0027027	430	0.0023256	490	0.0020408	550	0.0018181
311	0.0038154	371	0.0026954	431	0.0023202	491	0.0020367	551	0.0018149
312	0.0038051	372	0.0026882	432	0.0023148	492	0.0020325	552	0.0018116
313	0.0037949	373	0.0026810	433	0.0023095	493	0.0020284	553	0.0018083
314	0.0037847	374	0.0026738	434	0.0023042	494	0.0020243	554	0.0018051
315	0.0037746	375	0.0026666	435	0.0022989	495	0.0020202	555	0.0018018
316	0.0037646	376	0.0026596	436	0.0022936	496	0.0020162	556	0.0017986
317	0.0037546	377	0.0026525	437	0.0022883	497	0.0020121	557	0.0017953
318	0.0037447	378	0.0026455	438	0.0022831	498	0.0020080	558	0.0017921
319	0.0037348	379	0.0026385	439	0.0022779	499	0.0020040	559	0.0017889
320	0.0037250	380	0.0026316	440	0.0022727	500	0.002	560	0.0017857
321	0.0037153	381	0.0026247	441	0.0022676	501	0.0019960	561	0.0017825
322	0.0037056	382	0.0026178	442	0.0022624	502	0.0019920	562	0.0017794
323	0.0036960	383	0.0026110	443	0.0022573	503	0.0019881	563	0.0017762
324	0.0036864	384	0.0026042	444	0.0022522	504	0.0019841	564	0.0017730
325	0.0036769	385	0.0025974	445	0.0022472	505	0.0019801	565	0.0017699
326	0.0036675	386	0.0025907	446	0.0022422	506	0.0019763	566	0.0017668
327	0.0036581	387	0.0025840	447	0.0022371	507	0.0019724	567	0.0017637
328	0.0036488	388	0.0025773	448	0.0022321	508	0.0019685	568	0.0017606
329	0.0036395	389	0.0025707	449	0.0022272	509	0.0019646	569	0.0017575
330	0.0036303	390	0.0025641	450	0.0022222	510	0.0019608	570	0.0017544
331	0.0036211	391	0.0025575	451	0.0022173	511	0.0019569	571	0.0017513
332	0.0036120	392	0.0025510	452	0.0022124	512	0.0019531	572	0.0017483
333	0.0036030	393	0.0025445	453	0.0022075	513	0.0019493	573	0.0017452
334	0.0035940	394	0.0025381	454	0.0022026	514	0.0019455	574	0.0017422
335	0.0035851	395	0.0025316	455	0.0021978	515	0.0019417	575	0.0017391
336	0.0035762	396	0.0025252	456	0.0021930	516	0.0019380	576	0.0017361
337	0.0035674	397	0.0025189	457	0.0021882	517	0.0019342	577	0.0017331
338	0.0035586	398	0.0025126	458	0.0021834	518	0.0019305	578	0.0017301
339	0.0035499	399	0.0025063	459	0.0021786	519	0.0019268	579	0.0017271
340	0.0035412	400	0.0025	460	0.0021739	520	0.0019231	580	0.0017241
341	0.0029326	401	0.0024938	461	0.0021692	521	0.0019194	581	0.0017212
342	0.0029240	402	0.0024876	462	0.0021645	522	0.0019157	582	0.0017182
343	0.0029155	403	0.0024814	463	0.0021598	523	0.0019120	583	0.0017153
344	0.0029070	404	0.0024752	464	0.0021552	524	0.0019084	584	0.0017123
345	0.0028986	405	0.0024691	465	0.0021505	525	0.0019048	585	0.0017094
346	0.0028902	406	0.0024631	466	0.0021459	526	0.0019011	586	0.0017065
347	0.0028818	407	0.0024570	467	0.0021413	527	0.0018975	587	0.0017036
348	0.0028736	408	0.0024510	468	0.0021368	528	0.0018939	588	0.0017007
349	0.0028653	409	0.0024450	469	0.0021322	529	0.0018904	589	0.0016978
350	0.0028571	410	0.0024390	470	0.0021277	530	0.0018868	590	0.0016949
351	0.0028490	411	0.0024331	471	0.0021231	531	0.0018832	591	0.0016920
352	0.0028409	412	0.0024272	472	0.0021187	532	0.0018797	592	0.0016891
353	0.0028329	413	0.0024213	473	0.0021142	533	0.0018762	593	0.0016863
354	0.0028248	414	0.0024155	474	0.0021097	534	0.0018727	594	0.0016835
355	0.0028169	415	0.0024096	475	0.0021053	535	0.0018692	595	0.0016807
356	0.0028090	416	0.0024038	476	0.0021008	536	0.0018657	596	0.0016779
357	0.0028011	417	0.0023981	477	0.0020964	537	0.0018622	597	0.0016750
358	0.0027933	418	0.0023923	478	0.0020921	538	0.0018587	598	0.0016722
359	0.0027855	419	0.0023866	479	0.0020877	539	0.0018553	599	0.0016694
360	0.0027777	420	0.0023810	480	0.0020833	540	0.0018518	600	0.0016666

TABLE LVII.
RECIPROCAL OF NUMBERS.

Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.
601	0.0016639	661	0.0015129	721	0.0013870	781	0.0012804	841	0.0011891
602	0.0016611	662	0.0015106	722	0.0013850	782	0.0012788	842	0.0011876
603	0.0016584	663	0.0015083	723	0.0013831	783	0.0012771	843	0.0011862
604	0.0016556	664	0.0015060	724	0.0013812	784	0.0012755	844	0.0011848
605	0.0016529	665	0.0015038	725	0.0013793	785	0.0012739	845	0.0011834
606	0.0016501	666	0.0015015	726	0.0013774	786	0.0012723	846	0.0011820
607	0.0016474	667	0.0014993	727	0.0013755	787	0.0012706	847	0.0011806
608	0.0016447	668	0.0014970	728	0.0013736	788	0.0012690	848	0.0011792
609	0.0016420	669	0.0014948	729	0.0013717	789	0.0012674	849	0.0011779
610	0.0016393	670	0.0014925	730	0.0013699	790	0.0012658	850	0.0011765
611	0.0016367	671	0.0014903	731	0.0013680	791	0.0012642	851	0.0011751
612	0.0016340	672	0.0014881	732	0.0013661	792	0.0012626	852	0.0011737
613	0.0016313	673	0.0014859	733	0.0013643	793	0.0012610	853	0.0011723
614	0.0016287	674	0.0014837	734	0.0013624	794	0.0012594	854	0.0011710
615	0.0016260	675	0.0014814	735	0.0013605	795	0.0012579	855	0.0011696
616	0.0016234	676	0.0014793	736	0.0013587	796	0.0012563	856	0.0011682
617	0.0016207	677	0.0014771	737	0.0013569	797	0.0012547	857	0.0011669
618	0.0016181	678	0.0014749	738	0.0013550	798	0.0012531	858	0.0011655
619	0.0016155	679	0.0014728	739	0.0013532	799	0.0012516	859	0.0011641
620	0.0016129	680	0.0014706	740	0.0013513	800	0.00125	860	0.0011628
621	0.0016103	681	0.0014684	741	0.0013495	801	0.0012484	861	0.0011614
622	0.0016077	682	0.0014663	742	0.0013477	802	0.0012469	862	0.0011601
623	0.0016051	683	0.0014641	743	0.0013459	803	0.0012453	863	0.0011587
624	0.0016026	684	0.0014620	744	0.0013441	804	0.0012438	864	0.0011574
625	0.0016	685	0.0014599	745	0.0013423	805	0.0012422	865	0.0011561
626	0.0015974	686	0.0014577	746	0.0013405	806	0.0012407	866	0.0011547
627	0.0015949	687	0.0014556	747	0.0013387	807	0.0012392	867	0.0011534
628	0.0015924	688	0.0014535	748	0.0013369	808	0.0012376	868	0.0011521
629	0.0015898	689	0.0014514	749	0.0013351	809	0.0012361	869	0.0011507
630	0.0015873	690	0.0014493	750	0.0013333	810	0.0012346	870	0.0011494
631	0.0015848	691	0.0014472	751	0.0013316	811	0.0012330	871	0.0011481
632	0.0015823	692	0.0014451	752	0.0013298	812	0.0012315	872	0.0011468
633	0.0015798	693	0.0014430	753	0.0013280	813	0.0012300	873	0.0011455
634	0.0015773	694	0.0014409	754	0.0013263	814	0.0012285	874	0.0011442
635	0.0015748	695	0.0014388	755	0.0013245	815	0.0012270	875	0.0011429
636	0.0015723	696	0.0014368	756	0.0013228	816	0.0012255	876	0.0011416
637	0.0015699	697	0.0014347	757	0.0013210	817	0.0012240	877	0.0011403
638	0.0015674	698	0.0014327	758	0.0013193	818	0.0012225	878	0.0011390
639	0.0015649	699	0.0014306	759	0.0013175	819	0.0012210	879	0.0011377
640	0.0015625	700	0.0014286	760	0.0013158	820	0.0012195	880	0.0011363
641	0.0015601	701	0.0014265	761	0.0013141	821	0.0012180	881	0.0011351
642	0.0015576	702	0.0014245	762	0.0013123	822	0.0012165	882	0.0011338
643	0.0015552	703	0.0014225	763	0.0013106	823	0.0012151	883	0.0011325
644	0.0015528	704	0.0014205	764	0.0013089	824	0.0012136	884	0.0011312
645	0.0015504	705	0.0014184	765	0.0013072	825	0.0012121	885	0.0011299
646	0.0015480	706	0.0014164	766	0.0013055	826	0.0012106	886	0.0011287
647	0.0015456	707	0.0014144	767	0.0013038	827	0.0012092	887	0.0011274
648	0.0015432	708	0.0014124	768	0.0013021	828	0.0012077	888	0.0011261
649	0.0015408	709	0.0014104	769	0.0013004	829	0.0012063	889	0.0011249
650	0.0015385	710	0.0014085	770	0.0012987	830	0.0012048	890	0.0011236
651	0.0015361	711	0.0014065	771	0.0012970	831	0.0012034	891	0.0011223
652	0.0015337	712	0.0014045	772	0.0012953	832	0.0012019	892	0.0011211
653	0.0015314	713	0.0014025	773	0.0012937	833	0.0012005	893	0.0011198
654	0.0015291	714	0.0014006	774	0.0012920	834	0.0011990	894	0.0011186
655	0.0015267	715	0.0013986	775	0.0012903	835	0.0011976	895	0.0011173
656	0.0015244	716	0.0013966	776	0.0012887	836	0.0011962	896	0.0011161
657	0.0015221	717	0.0013947	777	0.0012870	837	0.0011947	897	0.0011148
658	0.0015198	718	0.0013928	778	0.0012853	838	0.0011933	898	0.0011136
659	0.0015175	719	0.0013908	779	0.0012837	839	0.0011919	899	0.0011123
660	0.0015151	720	0.0013888	780	0.0012821	840	0.0011905	900	0.0011111

TABLE LVII.
RECIPROCAL OF NUMBERS.

Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.	Num.	Reciproc.
901	0.0011099	921	0.0010858	941	0.0010627	961	0.0010406	981	0.0010194
902	0.0011086	922	0.0010846	942	0.0010616	962	0.0010395	982	0.0010183
903	0.0011074	923	0.0010834	943	0.0010604	963	0.0010384	983	0.0010173
904	0.0011062	924	0.0010823	944	0.0010593	964	0.0010373	984	0.0010163
905	0.0011050	925	0.0010810	945	0.0010582	965	0.0010363	985	0.0010152
906	0.0011038	926	0.0010799	946	0.0010571	966	0.0010352	986	0.0010142
907	0.0011025	927	0.0010787	947	0.0010560	967	0.0010341	987	0.0010132
908	0.0011013	928	0.0010776	948	0.0010549	968	0.0010331	988	0.0010121
909	0.0011001	929	0.0010764	949	0.0010537	969	0.0010320	989	0.0010111
910	0.0010989	930	0.0010753	950	0.0010526	970	0.0010309	990	0.0010101
911	0.0010977	931	0.0010741	951	0.0010515	971	0.0010299	991	0.0010091
912	0.0010965	932	0.0010730	952	0.0010504	972	0.0010288	992	0.0010081
913	0.0010953	933	0.0010718	953	0.0010493	973	0.0010277	993	0.0010070
914	0.0010941	934	0.0010707	954	0.0010482	974	0.0010267	994	0.0010060
915	0.0010929	935	0.0010695	955	0.0010471	975	0.0010256	995	0.0010050
916	0.0010917	936	0.0010684	956	0.0010460	976	0.0010246	996	0.0010040
917	0.0010905	937	0.0010672	957	0.0010449	977	0.0010235	997	0.0010030
918	0.0010893	938	0.0010661	958	0.0010438	978	0.0010225	998	0.0010020
919	0.0010881	939	0.0010650	959	0.0010428	979	0.0010215	999	0.0010010
920	0.0010870	940	0.0010638	960	0.0010416	980	0.0010204	1000	0.001

TABLE LVIII.

S Q U A R E R O O T S O F
N U M B E R S .

FROM 1 TO 1000.

Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.
1	1.0000000	21	4.5825757	41	6.4031242	61	7.8102497	81	9.0000000
2	1.4142136	22	4.6904158	42	6.4807407	62	7.8740079	82	9.0553851
3	1.7320508	23	4.7958315	43	6.5574985	63	7.9372539	83	9.1104336
4	2.0000000	24	4.8989795	44	6.6332496	64	8.0000000	84	9.1652514
5	2.2360680	25	5.0000000	45	6.7082039	65	8.0622577	85	9.2195445
6	2.4494897	26	5.0990195	46	6.7823300	66	8.1240384	86	9.2786185
7	2.6457513	27	5.1961524	47	6.8556546	67	8.1853528	87	9.3273791
8	2.8284271	28	5.2915026	48	6.9282032	68	8.2462113	88	9.3808315
9	3.0000000	29	5.3851648	49	7.0000000	69	8.3066239	89	9.4339811
10	3.1622777	30	5.4772256	50	7.0710678	70	8.3666003	90	9.4868330
11	3.3166258	31	5.5677644	51	7.1414284	71	8.4261498	91	9.5393920
12	3.4641016	32	5.6568542	52	7.2111026	72	8.4852814	92	9.5916630
13	3.6055513	33	5.7445626	53	7.2801099	73	8.5440037	93	9.6456508
14	3.7416574	34	5.8309519	54	7.3484692	74	8.6023253	94	9.6953597
15	3.8729833	35	5.9160798	55	7.4161985	75	8.6602540	95	9.7467943
16	4.0000000	36	6.0000000	56	7.4833148	76	8.7177979	96	9.7979590
17	4.1231056	37	6.0827625	57	7.5498344	77	8.7749644	97	9.8488578
18	4.2426407	38	6.1644140	58	7.6157731	78	8.8317609	98	9.8994949
19	4.3588989	39	6.2449980	59	7.6811457	79	8.8881944	99	9.9498744
20	4.4721360	40	6.3245553	60	7.7459667	80	8.9442719	100	10.0000000

TABLE LVIII.

SQUARE ROOTS OF NUMBERS.

Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.
101	10.0498756	161	12.6885775	221	14.8660688	281	16.7690547	341	18.4661853
102	10.0995049	162	12.7279220	222	14.8996644	282	16.7928557	342	18.4932421
103	10.1488916	163	12.7671453	223	14.9331845	283	16.8226038	343	18.5202591
104	10.1980390	164	12.8062485	224	14.9666295	284	16.8522995	344	18.5472370
105	10.2469508	165	12.8452326	225	15.0000000	285	16.8819430	345	18.5741757
106	10.2956301	166	12.8840987	226	15.0329638	286	16.9115345	346	18.6010752
107	10.3440804	167	12.9228480	227	15.0665191	287	16.9410743	347	18.6279361
108	10.3923048	168	12.9614814	228	15.0996689	288	16.9705628	348	18.6547581
109	10.4403065	169	13.0000000	229	15.1327460	289	17.0000000	349	18.6815417
110	10.4880885	170	13.0384048	230	15.1657509	290	17.0293863	350	18.7082870
111	10.5356538	171	13.0766968	231	15.1986841	291	17.0587221	351	18.7349940
112	10.5830052	172	13.1148770	232	15.2315462	292	17.0880074	352	18.7616631
113	10.6301458	173	13.1529464	233	15.2643375	293	17.1172428	353	18.7882942
114	10.6770782	174	13.1909060	234	15.2970585	294	17.1464281	354	18.8148878
115	10.7238053	175	13.2287566	235	15.3297098	295	17.1755464	355	18.8414437
116	10.7708296	176	13.2664992	236	15.3622914	296	17.2046505	356	18.8679622
117	10.8166538	177	13.3041347	237	15.3948043	297	17.2336880	357	18.8944437
118	10.8627805	178	13.3416641	238	15.4272487	298	17.2626765	358	18.9208880
119	10.9087121	179	13.3790882	239	15.4596249	299	17.2916164	359	18.9472953
120	10.9544512	180	13.4164079	240	15.4919383	300	17.3205080	360	18.9736660
121	11.0000000	181	13.4536240	241	15.5241747	301	17.3493515	361	19.0000000
122	11.0453610	182	13.4907376	242	15.5563491	302	17.3781471	362	19.0262976
123	11.0905365	183	13.5277493	243	15.5884572	303	17.4068951	363	19.0525589
124	11.1355287	184	13.5646600	244	15.6204993	304	17.4355958	364	19.0787841
125	11.1803939	185	13.6014705	245	15.6524759	305	17.4642491	365	19.1049731
126	11.2249722	186	13.6381817	246	15.6843871	306	17.4928557	366	19.1311264
127	11.2694277	187	13.6747943	247	15.7162337	307	17.5214154	367	19.1572441
128	11.3137085	188	13.7113092	248	15.7480158	308	17.5499288	368	19.1833261
129	11.3578167	189	13.7477271	249	15.7797339	309	17.5783959	369	19.2093728
130	11.4017543	190	13.7840488	250	15.8112882	310	17.6068169	370	19.2353841
131	11.4455231	191	13.8202750	251	15.8429795	311	17.6351921	371	19.2613602
132	11.4891253	192	13.8564065	252	15.8745079	312	17.6635218	372	19.2873016
133	11.5325626	193	13.8924440	253	15.9059738	313	17.6918061	373	19.3132080
134	11.5758369	194	13.9283883	254	15.9373774	314	17.7200451	374	19.3390538
135	11.6189500	195	13.9642400	255	15.9687194	315	17.7482393	375	19.3649168
136	11.6618038	196	14.0000000	256	16.0000000	316	17.7763889	376	19.3907194
137	11.7046999	197	14.0356688	257	16.0312195	317	17.8044939	377	19.4164879
138	11.7473444	198	14.0712473	258	16.0623784	318	17.8325546	378	19.4422221
139	11.7898261	199	14.1067360	259	16.0934770	319	17.8605711	379	19.4679223
140	11.8321596	200	14.1421356	260	16.1245154	320	17.8885439	380	19.4935887
141	11.8743421	201	14.1774469	261	16.1554944	321	17.9164729	381	19.5192212
142	11.9163753	202	14.2126704	262	16.1864140	322	17.9443584	382	19.5448202
143	11.9582607	203	14.2478068	263	16.2172748	323	17.9722008	383	19.5703858
144	12.0000000	204	14.2828569	264	16.2480769	324	18.0000000	384	19.5959179
145	12.0415946	205	14.3178211	265	16.2778205	325	18.0277563	385	19.6214169
146	12.0830460	206	14.3527001	266	16.3095064	326	18.0554701	386	19.6468828
147	12.1248557	207	14.3874945	267	16.3401347	327	18.0831413	387	19.6723156
148	12.1655251	208	14.4222051	268	16.3707055	328	18.1107702	388	19.6977157
149	12.2065556	209	14.4568322	269	16.4012194	329	18.1383571	389	19.7230890
150	12.2474487	210	14.4913761	270	16.4316768	330	18.1659021	390	19.7484177
151	12.2882057	211	14.5258390	271	16.4620777	331	18.1934059	391	19.7737100
152	12.3288280	212	14.5602198	272	16.4924225	332	18.2208671	392	19.7989899
153	12.3693169	213	14.5945195	273	16.5227117	333	18.2482576	393	19.8242277
154	12.4096736	214	14.6287389	274	16.5529453	334	18.2756669	394	19.8494332
155	12.4498996	215	14.6628782	275	16.5831240	335	18.3030052	395	19.8746070
156	12.4899960	216	14.6969384	276	16.6132248	336	18.3303028	396	19.8997488
157	12.5299640	217	14.7309199	277	16.6433170	337	18.3576598	397	19.9245589
158	12.5698051	218	14.7648230	278	16.6733320	338	18.3847763	398	19.9499373
159	12.6095202	219	14.7986485	279	16.7032930	339	18.4119527	399	19.9749843
160	12.6491106	220	14.8323970	280	16.7332005	340	18.4390890	400	20.0000000

TABLE LVIII.
SQUARE ROOTS OF NUMBERS.

Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.
401	20.0249844	461	21.4709106	521	22.8254244	581	24.1039416	641	25.3179778
402	20.0499377	462	21.4941853	522	22.8473193	582	24.1246762	642	25.3377189
403	20.0748599	463	21.5174548	523	22.8691933	583	24.1453929	643	25.3574447
404	20.0997512	464	21.5406592	524	22.8910463	584	24.1660919	644	25.3771551
405	20.1246118	465	21.5638587	525	22.9128785	585	24.1867732	645	25.3968502
406	20.1494417	466	21.5874031	526	22.9346899	586	24.2074369	646	25.4165301
407	20.1742410	467	21.6101828	527	22.9564806	587	24.2280829	647	25.4361947
408	20.1990099	468	21.6333077	528	22.9782506	588	24.2487113	648	25.4558441
409	20.2237484	469	21.6564078	529	22.9999999	589	24.2693222	649	25.4754784
410	20.2484567	470	21.6794834	530	23.0217289	590	24.2899156	650	25.4950976
411	20.2731849	471	21.7025344	531	23.0434672	591	24.3104916	651	25.5147016
412	20.2977781	472	21.7255610	532	23.0651252	592	24.3310501	652	25.5342907
413	20.3224014	473	21.7485692	533	23.0867928	593	24.3515913	653	25.5538647
414	20.3469899	474	21.7715411	534	23.1084400	594	24.3721152	654	25.5734237
415	20.3715488	475	21.7944947	535	23.1300670	595	24.3926218	655	25.5929678
416	20.3960781	476	21.8174242	536	23.1516738	596	24.4131112	656	25.6124969
417	20.4205779	477	21.8403298	537	23.1732605	597	24.4335894	657	25.6320112
418	20.4450483	478	21.8632111	538	23.1948270	598	24.4540385	658	25.6515107
419	20.4694895	479	21.8860686	539	23.2163735	599	24.4744765	659	25.6709993
420	20.4939015	480	21.9089023	540	23.2379001	600	24.4948974	660	25.6904651
421	20.5182845	481	21.9317122	541	23.2594067	601	24.5153013	661	25.7099203
422	20.5426386	482	21.9544984	542	23.2808935	602	24.5356883	662	25.7293607
423	20.5669638	483	21.9772610	543	23.3023604	603	24.5560583	663	25.7487864
424	20.5912603	484	22.0000000	544	23.3238076	604	24.5764114	664	25.7681974
425	20.6155281	485	22.0227155	545	23.3452351	605	24.5967478	665	25.7875939
426	20.6397674	486	22.0454077	546	23.3666429	606	24.6170672	666	25.8069738
427	20.6639783	487	22.0680765	547	23.3880311	607	24.6373700	667	25.8263431
428	20.6881609	488	22.0907220	548	23.4093998	608	24.6576560	668	25.8456960
429	20.7123152	489	22.1133444	549	23.4307490	609	24.6779253	669	25.8650343
430	20.7364414	490	22.1359436	550	23.4520788	610	24.6981781	670	25.8843582
431	20.7605395	491	22.1585198	551	23.4733892	611	24.7184142	671	25.9036677
432	20.7846097	492	22.1810730	552	23.4946802	612	24.7386338	672	25.9229628
433	20.8086520	493	22.2036033	553	23.5159320	613	24.7588368	673	25.9422435
434	20.8326667	494	22.2261108	554	23.5372046	614	24.7790234	674	25.9615100
435	20.8566536	495	22.2485955	555	23.5584380	615	24.7991935	675	25.9807621
436	20.8806130	496	22.2710574	556	23.5796522	616	24.8193473	676	26.0000000
437	20.9045450	497	22.2934968	557	23.6008474	617	24.8394847	677	26.0192237
438	20.9284495	498	22.3159136	558	23.6220236	618	24.8596058	678	26.0384331
439	20.9523268	499	22.3383079	559	23.6431808	619	24.8797106	679	26.0576284
440	20.9761770	500	22.3606798	560	23.6643191	620	24.8997992	680	26.0768096
441	21.0000000	501	22.3830293	561	23.6854386	621	24.9198716	681	26.0959767
442	21.0237960	502	22.4053565	562	23.7065392	622	24.9399278	682	26.1151297
443	21.0475652	503	22.4276615	563	23.7276210	623	24.9599679	683	26.1342687
444	21.0713075	504	22.4499441	564	23.7486842	624	24.9799920	684	26.1533937
445	21.0950231	505	22.4722051	565	23.7697286	625	25.0000000	685	26.1725047
446	21.1187121	506	22.4944438	566	23.7907545	626	25.0199920	686	26.1916017
447	21.1423745	507	22.5166605	567	23.8117618	627	25.0399681	687	26.2106848
448	21.1660105	508	22.5388553	568	23.8327506	628	25.0599282	688	26.2297541
449	21.1896201	509	22.5610283	569	23.8537209	629	25.0798724	689	26.2488095
450	21.2132034	510	22.5831796	570	23.8746728	630	25.0998008	690	26.2678511
451	21.2367806	511	22.6053091	571	23.8956063	631	25.1197134	691	26.2868789
452	21.2602916	512	22.6274170	572	23.9165215	632	25.1396102	692	26.3058929
453	21.2837967	513	22.6495033	573	23.9374184	633	25.1594913	693	26.3248932
454	21.3072757	514	22.6715681	574	23.9582971	634	25.1793566	694	26.3438797
455	21.3307290	515	22.6936114	575	23.9791576	635	25.1992063	695	26.3628527
456	21.3541565	516	22.7156334	576	24.0000000	636	25.2190404	696	26.3818119
457	21.3775583	517	22.7376340	577	24.0208243	637	25.2388589	697	26.4007576
458	21.4009346	518	22.7596133	578	24.0416906	638	25.2586619	698	26.4196896
459	21.4242853	519	22.7815715	579	24.0624189	639	25.2784498	699	26.4386081
460	21.4476106	520	22.8035085	580	24.0831684	640	25.2982213	700	26.4575131

TABLE LVIII.

SQUARE ROOTS OF NUMBERS.

Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.	Num.	Square Root.
701	26.4764046	761	27.5869284	821	28.6530976	881	29.6816441	941	30.6757233
702	26.4953826	762	27.6043475	822	28.6705424	882	29.6984848	942	30.6920185
703	26.5141479	763	27.6224546	823	28.6879766	883	29.7153159	943	30.7083051
704	26.5329383	764	27.6405499	824	28.7054002	884	29.7321375	944	30.7245890
705	26.5518361	765	27.6586394	825	28.7228132	885	29.7489496	945	30.7408523
706	26.5706605	766	27.6767050	826	28.7402157	886	29.7657521	946	30.7571130
707	26.5894716	767	27.6947648	827	28.7576077	887	29.7825452	947	30.7733651
708	26.6082694	768	27.7128129	828	28.7749891	888	29.7993289	948	30.7896066
709	26.6270539	769	27.7308492	829	28.7923601	889	29.8161030	949	30.8058436
710	26.6458252	770	27.7488739	830	28.8097306	890	29.8328678	950	30.8220700
711	26.6645832	771	27.7668868	831	28.8270706	891	29.8496231	951	30.8382879
712	26.6833281	772	27.7848880	832	28.8444102	892	29.8663690	952	30.8544972
713	26.7020598	773	27.8028775	833	28.8617394	893	29.8831036	953	30.8706981
714	26.7207784	774	27.8208555	834	28.8790581	894	29.8998328	954	30.8868943
715	26.7394839	775	27.8388218	835	28.8963666	895	29.9165506	955	30.9030740
716	26.7581763	776	27.8567765	836	28.9136646	896	29.9332591	956	30.9192497
717	26.7768557	777	27.8747197	837	28.9309523	897	29.9499583	957	30.9354166
718	26.7955220	778	27.8926514	838	28.9482297	898	29.9666481	958	30.9515751
719	26.8141753	779	27.9105715	839	28.9654967	899	29.9833287	959	30.9677251
720	26.8328157	780	27.9284801	840	28.9827535	900	30.0000000	960	30.9838668
721	26.8514432	781	27.9463772	841	29.0000000	901	30.0166620	961	31.0000000
722	26.8700577	782	27.9642639	842	29.0172362	902	30.0333148	962	31.0161248
723	26.8886593	783	27.9821371	843	29.0344623	903	30.0499584	963	31.0322413
724	26.9072481	784	28.0000080	844	29.0516781	904	30.0665928	964	31.0483494
725	26.9258240	785	28.0178515	845	29.0688837	905	30.0832179	965	31.0644491
726	26.9443872	786	28.0356915	846	29.0860791	906	30.0998339	966	31.0805435
727	26.9629375	787	28.0535203	847	29.1032644	907	30.1164407	967	31.0966206
728	26.9814751	788	28.0713377	848	29.1204396	908	30.1330383	968	31.1126984
729	27.0000000	789	28.0891458	849	29.1376046	909	30.1496269	969	31.1287648
730	27.0185122	790	28.1069386	850	29.1547595	910	30.1662062	970	31.1448230
731	27.0370117	791	28.1247222	851	29.1719043	911	30.1827765	971	31.1608729
732	27.0554985	792	28.1424946	852	29.1890390	912	30.1993377	972	31.1769145
733	27.0739727	793	28.1602557	853	29.2061637	913	30.2158899	973	31.1929479
734	27.0924344	794	28.1780056	854	29.2232784	914	30.2324329	974	31.2089731
735	27.1108834	795	28.1957443	855	29.2403830	915	30.2489669	975	31.2249900
736	27.1293199	796	28.2134720	856	29.2574777	916	30.2654919	976	31.2409987
737	27.1477439	797	28.2311684	857	29.2745623	917	30.2820079	977	31.2569992
738	27.1661554	798	28.2488958	858	29.2916370	918	30.2985148	978	31.2729915
739	27.1845544	799	28.2665881	859	29.3087018	919	30.3150128	979	31.2889757
740	27.2029410	800	28.2842712	860	29.3257566	920	30.3315018	980	31.3049517
741	27.2213152	801	28.3019434	861	29.3428015	921	30.3479818	981	31.3209195
742	27.2396769	802	28.3196045	862	29.3598365	922	30.3644529	982	31.3368792
743	27.2580263	803	28.3372546	863	29.3768616	923	30.3809151	983	31.3528306
744	27.2763634	804	28.3548958	864	29.3938769	924	30.3973683	984	31.3687743
745	27.2946881	805	28.3725219	865	29.4108823	925	30.4138127	985	31.3847097
746	27.3130006	806	28.3901391	866	29.4278779	926	30.4302481	986	31.4006369
747	27.3313007	807	28.4077454	867	29.4448637	927	30.4466747	987	31.4165561
748	27.3495887	808	28.4253408	868	29.4618397	928	30.4630924	988	31.4324673
749	27.3678644	809	28.4429253	869	29.4788059	929	30.4795013	989	31.4483704
750	27.3861279	810	28.4604989	870	29.4957624	930	30.4959014	990	31.4642654
751	27.4043792	811	28.4780617	871	29.5127091	931	30.5122926	991	31.4801525
752	27.4226184	812	28.4956137	872	29.5296461	932	30.5286750	992	31.4960315
753	27.4408455	813	28.5131549	873	29.5465734	933	30.5450487	993	31.5119025
754	27.4590604	814	28.5306852	874	29.5635000	934	30.5614136	994	31.5277655
755	27.4772633	815	28.5482048	875	29.5803989	935	30.5777697	995	31.5436206
756	27.4954542	816	28.5657157	876	29.5972972	936	30.5941171	996	31.5594677
757	27.5136350	817	28.5832119	877	29.6141858	937	30.6104557	997	31.5753068
758	27.5317998	818	28.6006993	878	29.6310848	938	30.6267857	998	31.5911380
759	27.5499546	819	28.6181760	879	29.6479325	939	30.6431069	999	31.6069612
760	27.5680975	820	28.6356421	880	29.6647939	940	30.6594194	1000	31.6227766

TABLE LIX.
CUBE ROOTS OF NUMBERS, FROM 1 TO 800.

Num.	Cube Root.	Num.	Cube Root.	Num.	Cube Root.	Num.	Cube Root.	Num.	Cube Root.
1	1.000000	61	3.936497	121	4.946088	181	5.656652	241	6.223084
2	1.259921	62	3.957892	122	4.959675	182	5.667051	242	6.231680
3	1.442250	63	3.979057	123	4.973190	183	5.677411	243	6.240253
4	1.587401	64	4.000000	124	4.986681	184	5.687734	244	6.248801
5	1.709976	65	4.020726	125	5.000000	185	5.698019	245	6.257324
6	1.817121	66	4.041240	126	5.013398	186	5.708267	246	6.265826
7	1.912933	67	4.061518	127	5.026526	187	5.718479	247	6.274305
8	2.000000	68	4.081551	128	5.039684	188	5.728654	248	6.282761
9	2.080084	69	4.101566	129	5.052774	189	5.738794	249	6.299194
10	2.154435	70	4.121285	130	5.065797	190	5.748897	250	6.299605
11	2.223980	71	4.140818	131	5.078753	191	5.758965	251	6.307993
12	2.289428	72	4.160168	132	5.091643	192	5.768998	252	6.316360
13	2.351335	73	4.179339	133	5.104469	193	5.778996	253	6.324704
14	2.410142	74	4.198336	134	5.117230	194	5.788960	254	6.333025
15	2.466212	75	4.217163	135	5.129928	195	5.798890	255	6.341325
16	2.519842	76	4.235824	136	5.142563	196	5.808786	256	6.349604
17	2.571282	77	4.254321	137	5.155137	197	5.818648	257	6.357861
18	2.620741	78	4.272659	138	5.167649	198	5.828476	258	6.366098
19	2.668402	79	4.290841	139	5.180101	199	5.838272	259	6.374312
20	2.714418	80	4.308870	140	5.192494	200	5.848035	260	6.382504
21	2.758923	81	4.326749	141	5.204828	201	5.857765	261	6.390677
22	2.802039	82	4.344481	142	5.217103	202	5.867464	262	6.398829
23	2.843867	83	4.362071	143	5.229321	203	5.877131	263	6.406959
24	2.884499	84	4.379519	144	5.241482	204	5.886766	264	6.415068
25	2.924018	85	4.396830	145	5.253588	205	5.896369	265	6.423157
26	2.962496	86	4.414005	146	5.265637	206	5.905941	266	6.431228
27	3.000000	87	4.431047	147	5.277632	207	5.915482	267	6.439278
28	3.036589	88	4.447960	148	5.289572	208	5.924992	268	6.447306
29	3.072317	89	4.464745	149	5.301459	209	5.934472	269	6.455315
30	3.107232	90	4.481405	150	5.313293	210	5.943921	270	6.463304
31	3.141381	91	4.497942	151	5.325074	211	5.953342	271	6.471274
32	3.174802	92	4.514357	152	5.336803	212	5.962733	272	6.479224
33	3.207594	93	4.530655	153	5.348481	213	5.972093	273	6.487154
34	3.239612	94	4.546836	154	5.360108	214	5.981425	274	6.495065
35	3.271066	95	4.562903	155	5.371685	215	5.990727	275	6.502957
36	3.301927	96	4.578857	156	5.383213	216	6.000000	276	6.510831
37	3.332222	97	4.594701	157	5.394690	217	6.009244	277	6.518685
38	3.361975	98	4.610436	158	5.406120	218	6.018461	278	6.526520
39	3.391211	99	4.626065	159	5.417501	219	6.027650	279	6.534335
40	3.419952	100	4.641589	160	5.428835	220	6.036810	280	6.542132
41	3.448217	101	4.657010	161	5.440122	221	6.045943	281	6.549911
42	3.476027	102	4.672330	162	5.451362	222	6.055050	282	6.557672
43	3.503398	103	4.687548	163	5.462556	223	6.064128	283	6.565415
44	3.530348	104	4.702669	164	5.473703	224	6.073178	284	6.573139
45	3.556893	105	4.717694	165	5.484806	225	6.082201	285	6.580845
46	3.583048	106	4.732624	166	5.495865	226	6.091199	286	6.588533
47	3.608826	107	4.747459	167	5.506879	227	6.100171	287	6.596207
48	3.634241	108	4.762203	168	5.517848	228	6.109115	288	6.603855
49	3.659306	109	4.776856	169	5.528775	229	6.118032	289	6.611489
50	3.684031	110	4.791420	170	5.539658	230	6.126925	290	6.619105
51	3.708430	111	4.805896	171	5.550499	231	6.135792	291	6.626705
52	3.732511	112	4.820284	172	5.561298	232	6.144634	292	6.634288
53	3.756286	113	4.834588	173	5.572054	233	6.153450	293	6.641853
54	3.779768	114	4.848808	174	5.582770	234	6.162240	294	6.649400
55	3.802958	115	4.862944	175	5.593445	235	6.171006	295	6.656931
56	3.825862	116	4.876999	176	5.604079	236	6.179747	296	6.664444
57	3.848501	117	4.890973	177	5.614673	237	6.188463	297	6.671940
58	3.870877	118	4.904868	178	5.625226	238	6.197155	298	6.679421
59	3.893996	119	4.918685	179	5.635741	239	6.205822	299	6.686885
60	3.914867	120	4.932424	180	5.646216	240	6.214465	300	6.694331

TABLE LX.
AMOUNT OF £1 AT COMPOUND INTEREST.

Years.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.
1	1.03000	1.03500	1.04000	1.04500	1.05000	1.06000
2	1.06090	1.07132	1.08160	1.09202	1.10250	1.12360
3	1.09273	1.10872	1.12486	1.14117	1.15762	1.19102
4	1.12551	1.14752	1.16986	1.19252	1.21551	1.26248
5	1.15927	1.18769	1.21665	1.24618	1.27628	1.33823
6	1.19405	1.22925	1.26532	1.30226	1.34010	1.41852
7	1.22987	1.27228	1.31593	1.36086	1.40710	1.50363
8	1.26677	1.31681	1.36857	1.42210	1.47745	1.59385
9	1.30477	1.36290	1.42321	1.48609	1.55133	1.68948
10	1.34392	1.41060	1.48024	1.55297	1.62889	1.79085
11	1.38423	1.45997	1.53945	1.62285	1.71034	1.89830
12	1.42576	1.51107	1.60103	1.69588	1.79586	2.01220
13	1.46853	1.56396	1.66507	1.77220	1.88565	2.13293
14	1.51259	1.61869	1.73168	1.85194	1.97993	2.26980
15	1.55797	1.67535	1.80094	1.93528	2.07893	2.39656
16	1.60471	1.73399	1.87298	2.02237	2.18287	2.54025
17	1.65285	1.79468	1.94790	2.11338	2.29202	2.69277
18	1.70243	1.85749	2.02582	2.20848	2.40662	2.85434
19	1.75351	1.92250	2.10685	2.30786	2.52695	3.02560
20	1.80611	1.98979	2.19112	2.41171	2.65330	3.20713
21	1.86029	2.05943	2.27877	2.52024	2.78596	3.39956
22	1.91610	2.13151	2.36992	2.63365	2.92526	3.60354
23	1.97359	2.20611	2.46472	2.75217	3.07152	3.81975
24	2.03279	2.28333	2.56330	2.87601	3.22510	4.04893
25	2.09378	2.36324	2.66584	3.00543	3.38635	4.29187
26	2.15659	2.44596	2.77247	3.14068	3.55567	4.54938
27	2.22129	2.53157	2.88337	3.28201	3.73346	4.82235
28	2.28793	2.62017	2.99870	3.42970	3.92013	5.11169
29	2.35657	2.71188	3.11865	3.58404	4.11614	5.41839
30	2.42726	2.80679	3.24340	3.74532	4.32194	5.74349
31	2.50008	2.90503	3.37813	3.91386	4.53804	6.08810
32	2.57508	3.00671	3.50806	4.08998	4.76494	6.45339
33	2.65233	3.11194	3.64838	4.27403	5.00319	6.84059
34	2.73190	3.22086	3.79432	4.46636	5.25335	7.25102
35	2.81386	3.33359	3.94609	4.66735	5.51601	7.68609
36	2.89828	3.45027	4.10393	4.87738	5.79182	8.14726
37	2.98523	3.57102	4.26809	5.09686	6.08141	8.63609
38	3.07478	3.69601	4.43881	5.32622	6.38548	9.15425
39	3.16703	3.82537	4.61637	5.56590	6.70475	9.70351
40	3.26204	3.95926	4.80102	5.81636	7.03999	10.28572
41	3.35990	4.09783	4.99306	6.07810	7.39199	10.90286
42	3.46070	4.24126	5.19278	6.35161	7.76159	11.55703
43	3.56452	4.38970	5.40050	6.63744	8.14967	12.25045
44	3.67145	4.54334	5.61651	6.93612	8.55715	12.98548
45	3.78160	4.70236	5.84118	7.24825	8.98501	13.76461
46	3.89504	4.86694	6.07482	7.57442	9.43426	14.59049
47	4.01189	5.03728	6.31782	7.91527	9.90597	15.46592
48	4.13225	5.21359	6.57053	8.27146	10.40127	16.39387
49	4.25622	5.39606	6.83335	8.64367	10.92133	17.37750
50	4.38391	5.58493	7.10668	9.03264	11.46746	18.42015
51	4.51542	5.78040	7.39095	9.43910	12.04077	19.52536
52	4.65089	5.98271	7.68659	9.86386	12.64281	20.69688
53	4.79041	6.19211	7.99405	10.30774	13.27495	21.93870
54	4.93412	6.40888	8.31381	10.77159	13.93870	23.25503
55	5.08215	6.63314	8.64637	11.25631	14.63563	24.65032
56	5.23461	6.86530	8.99222	11.76284	15.36741	26.12934
57	5.39165	7.10559	9.35191	12.29217	16.13578	27.69710
58	5.55340	7.35428	9.72599	12.84532	16.94257	29.35883
59	5.72000	7.61168	10.11503	13.42336	17.78970	31.12046
60	5.89160	7.87809	10.51963	14.02741	18.67919	32.98769

TABLE LXI.

PRESENT VALUE OF £1, AT COMPOUND INTEREST.

Years.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.
1	.970874	.966184	.961588	.956938	.952381	.943396
2	.942596	.933511	.924556	.915730	.907029	.889996
3	.915142	.901943	.888996	.876297	.863848	.839619
4	.888437	.871442	.854804	.838561	.822702	.792094
5	.862609	.841973	.821927	.802451	.783526	.747258
6	.837484	.813501	.790315	.767896	.746215	.704961
7	.813092	.785991	.759918	.734828	.710681	.665057
8	.789409	.759412	.730690	.703185	.676839	.627412
9	.766417	.733731	.702587	.672904	.644609	.591898
10	.744094	.708919	.675564	.643928	.613913	.558395
11	.722421	.684945	.649581	.616199	.584679	.526788
12	.701580	.661783	.624597	.589664	.556837	.496969
13	.680951	.639404	.600574	.564272	.530321	.468839
14	.661118	.617782	.577475	.539973	.505068	.442301
15	.641862	.596191	.555265	.517290	.481017	.417265
16	.623167	.576706	.533908	.494469	.458112	.393646
17	.605016	.557204	.513373	.473176	.436297	.371364
18	.587395	.538361	.493628	.452800	.415321	.350344
19	.570286	.520156	.474642	.433302	.395734	.330513
20	.553676	.502566	.456387	.413643	.376889	.311805
21	.537549	.485571	.438834	.396987	.358942	.294155
22	.521893	.469151	.421955	.379701	.341850	.277505
23	.506692	.453286	.405726	.363350	.325571	.261797
24	.491934	.437957	.390121	.347703	.310068	.246979
25	.477606	.423147	.375117	.332731	.295503	.232999
26	.463695	.408838	.360689	.318402	.281241	.219810
27	.450189	.395012	.346817	.304691	.267848	.207368
28	.437077	.381654	.333477	.291571	.255094	.195630
29	.424346	.368748	.320651	.279015	.242946	.184557
30	.411987	.356278	.308319	.267000	.231377	.174110
31	.399987	.344230	.296460	.255502	.220359	.164255
32	.388337	.332590	.285058	.244500	.209866	.154957
33	.377026	.321343	.274094	.233971	.199873	.146186
34	.366445	.310476	.263552	.223896	.190355	.137912
35	.355383	.299977	.253415	.214254	.181290	.130105
36	.345032	.289833	.243669	.205028	.172657	.122741
37	.334983	.280032	.234297	.196199	.164436	.115793
38	.325226	.270562	.225285	.187750	.156605	.109239
39	.315754	.261413	.216621	.179665	.149148	.103056
40	.306557	.252572	.208289	.171929	.142046	.097222
41	.297628	.244031	.200273	.164525	.135282	.091719
42	.288959	.235779	.192575	.157440	.128840	.086527
43	.280548	.227806	.185168	.150661	.122704	.081630
44	.272372	.220102	.178046	.144173	.116861	.077009
45	.264439	.212659	.171198	.137964	.111297	.072650
46	.256737	.205468	.164614	.132023	.105997	.068538
47	.249259	.198520	.158283	.126338	.100949	.064658
48	.241999	.191806	.152195	.120898	.096142	.060998
49	.234950	.185320	.146341	.115692	.091564	.057546
50	.228107	.179053	.140713	.110710	.087204	.054288
51	.221463	.172998	.135301	.105942	.083051	.051215
52	.215013	.167148	.130097	.101380	.079096	.048316
53	.208750	.161496	.125093	.097014	.075390	.045582
54	.202670	.156035	.120282	.092857	.071743	.043001
55	.196767	.150758	.115656	.088859	.068326	.040567
56	.191036	.145660	.111208	.085013	.065073	.038271
57	.185472	.140734	.106930	.081353	.061974	.036105
58	.180070	.135975	.102817	.077849	.059023	.034061
59	.174825	.131377	.098963	.074497	.056212	.032133
60	.169733	.126934	.095060	.071289	.053586	.030314

TABLE LXII.

AMOUNT OF AN ANNUITY OF £1, AT COMPOUND INTEREST.

Years.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.
1	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	2.03000	2.03500	2.04000	2.04500	2.05000	2.06000
3	3.09090	3.10623	3.12160	3.13703	3.15250	3.18360
4	4.18363	4.21494	4.24646	4.27819	4.31013	4.37462
5	5.30914	5.36247	5.41632	5.47971	5.52563	5.63709
6	6.46841	6.55015	6.63297	6.71689	6.80191	6.97532
7	7.66246	7.77941	7.89829	8.01915	8.14201	8.39384
8	8.89234	9.05169	9.21423	9.38001	9.54911	9.89747
9	10.15911	10.36850	10.58279	10.80211	11.02656	11.49132
10	11.46388	11.73139	12.00611	12.28821	12.57789	13.18079
11	12.80780	13.14199	13.48635	13.84118	14.20679	14.97164
12	14.19203	14.60196	15.02580	15.46403	15.91713	16.86994
13	15.61779	16.11303	16.62684	17.15991	17.71298	18.88214
14	17.08632	17.67699	18.29191	18.93211	19.59863	21.01507
15	18.59891	19.29568	20.02359	20.78405	21.57856	23.27597
16	20.15688	20.97103	21.82453	22.71934	23.65749	25.67253
17	21.76159	22.70502	23.69751	24.74171	25.84037	28.21288
18	23.41443	24.49969	25.64541	26.85508	28.13238	30.90565
19	25.11687	26.35718	27.67123	29.06356	30.53900	33.75999
20	26.87037	28.27968	29.77808	31.37142	33.06595	36.78559
21	28.67649	30.26947	31.96920	33.78314	35.71925	39.99273
22	30.53678	32.32890	34.24797	36.30338	38.50521	43.39299
23	32.45288	34.46041	36.61789	38.93703	41.43047	46.99583
24	34.42647	36.66653	39.03260	41.68920	44.50200	50.81558
25	36.45926	38.94986	41.64591	44.56521	47.72710	54.86451
26	38.55304	41.31310	44.31174	47.57064	51.11345	59.15638
27	40.70963	43.75906	47.08421	50.71132	54.66913	63.70577
28	42.93092	46.29063	49.96758	53.99338	58.40258	68.52811
29	45.21885	48.91080	52.96629	57.42303	62.32271	73.63980
30	47.57542	51.62268	56.08494	61.00707	66.43885	79.05819
31	50.00268	54.42947	59.32833	64.75239	70.76079	84.80168
32	52.50276	57.33450	62.70147	68.66624	75.29883	90.88978
33	55.07784	60.34121	66.20953	72.75623	80.06377	97.34816
34	57.79018	63.45315	69.85791	77.03096	85.06696	104.18375
35	60.46208	66.67401	73.65922	81.49662	90.32031	111.43478
36	63.27594	70.00760	77.59831	86.16397	95.83632	119.12087
37	66.17422	73.45787	81.70225	91.04134	101.62814	127.26812
38	69.15945	77.02889	85.97034	96.13820	107.79655	135.90421
39	72.29423	80.72491	90.40915	101.46442	114.09502	145.03846
40	75.40126	84.55028	95.02552	107.03032	120.79977	154.76196
41	78.66330	88.50954	99.82654	112.84669	127.83976	165.04768
42	82.02320	92.60737	104.81960	118.92479	135.25175	175.95054
43	85.48389	96.84863	110.01238	125.27640	142.99334	187.50758
44	89.04841	101.23833	115.41288	131.91384	151.14301	199.75808
45	92.71986	105.78167	121.02939	138.84996	159.70016	212.74351
46	96.50146	110.48403	126.87057	146.09821	168.68516	226.50812
47	100.39630	115.35097	132.94539	153.67263	178.11942	241.09861
48	104.40840	120.38826	139.26821	161.58790	188.09599	256.56453
49	108.54065	125.60185	145.83973	169.85936	198.42666	272.95840
50	112.79687	130.99791	152.66708	178.50803	209.34800	290.33590
51	117.18077	136.58284	159.77377	187.53566	220.81539	308.75606
52	121.69620	142.36324	167.16472	196.97477	232.85616	328.28142
53	126.34708	148.34595	174.85131	206.83863	245.49897	348.97831
54	131.13749	154.53806	182.84586	217.14687	258.77392	370.91701
55	136.07163	160.94689	191.15917	227.91796	272.71262	394.17903
56	141.15377	167.58003	199.80554	239.17427	287.34825	418.82235
57	146.38888	174.44333	208.79776	250.93711	302.71566	444.95169
58	151.78003	181.55092	218.14967	263.22928	318.85144	472.64879
59	157.33343	188.90519	227.87566	276.07460	335.79402	502.07772
60	163.05344	196.51688	237.99068	289.49795	353.58372	533.13818

TABLE LXIII.

PRESENT VALUE OF AN ANNUITY OF £1, COMPOUND INTEREST.

Years.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.
1	0.97087	0.96618	0.96154	0.95694	0.95238	0.94840
2	1.91947	1.89969	1.88610	1.87267	1.85941	1.83839
3	2.82861	2.80164	2.77509	2.74896	2.72325	2.67301
4	3.71710	3.67308	3.62990	3.58753	3.54595	3.46511
5	4.57971	4.51505	4.45182	4.38998	4.32948	4.21236
6	5.41719	5.32855	5.24214	5.15787	5.07569	4.91732
7	6.23028	6.11454	6.00205	5.89270	5.78637	5.59238
8	7.01969	6.87396	6.73274	6.59589	6.46321	6.20979
9	7.78611	7.60769	7.43593	7.26879	7.10782	6.80169
10	8.53020	8.31661	8.11090	7.91272	7.72173	7.36009
11	9.25263	9.00153	8.76048	8.52892	8.30641	7.88687
12	9.95400	9.66333	9.38507	9.11858	8.86325	8.38384
13	10.63495	10.30274	9.98565	9.68285	9.39357	8.85268
14	11.29607	10.93052	10.56312	10.22283	9.89864	9.29498
15	11.93794	11.51741	11.11839	10.73955	10.37966	9.71225
16	12.56110	12.09412	11.65230	11.23402	10.83777	10.10589
17	13.16612	12.65132	12.16567	11.70719	11.37407	10.47726
18	13.75351	13.18968	12.65930	12.15999	11.68959	10.82760
19	14.32330	13.70984	13.13394	12.59329	12.08592	11.15812
20	14.87747	14.21240	13.59033	13.00794	12.46221	11.46992
21	15.41502	14.69797	14.02916	13.40479	12.82115	11.76408
22	15.93692	15.16712	14.45112	13.78442	13.16300	12.04158
23	16.44361	15.62041	14.85684	14.14777	13.48857	12.30338
24	16.93554	16.05837	15.24696	14.49548	13.79864	12.55036
25	17.41315	16.48151	15.62208	14.82821	14.09394	12.78336
26	17.87684	16.89035	15.98277	15.14661	14.37519	13.00317
27	18.32703	17.28536	16.32959	15.45150	14.64308	13.21053
28	18.76411	17.66702	16.66306	15.74287	14.89813	13.40616
29	19.18845	18.03577	16.98371	16.02189	15.14107	13.59072
30	19.60044	18.39205	17.29203	16.28889	15.37245	13.76483
31	20.00043	18.73628	17.58849	16.54439	15.59281	13.92909
32	20.38877	19.06887	17.87355	16.78889	15.80268	14.08404
33	20.76579	19.39021	18.14765	17.02286	16.00255	14.23023
34	21.13184	19.70068	18.41190	17.24676	16.19290	14.36814
35	21.48722	20.00066	18.66461	17.46101	16.37419	14.49825
36	21.83223	20.29049	18.90828	17.66604	16.54685	14.62099
37	22.16724	20.57053	19.14258	17.86224	16.71129	14.73678
38	22.49246	20.84109	19.36786	18.04999	16.86789	14.84602
39	22.80822	21.10250	19.58448	18.22966	17.01704	14.94907
40	23.11477	21.35507	19.79277	18.40158	17.15909	15.04630
41	23.41240	21.59910	19.99305	18.56611	17.29437	15.13802
42	23.70136	21.83488	20.18563	18.72355	17.42321	15.22454
43	23.98190	22.06269	20.37079	18.87421	17.54591	15.30617
44	24.25427	22.28279	20.54884	19.01838	17.66277	15.38318
45	24.51871	22.49545	20.72004	19.15635	17.77407	15.45583
46	24.77545	22.70092	20.88465	19.28837	17.88007	15.52437
47	25.02471	22.89944	21.04294	19.41471	17.98102	15.58903
48	25.26671	23.09124	21.19513	19.53561	18.07716	15.65003
49	25.50166	23.27656	21.34147	19.65130	18.16872	15.70757
50	25.72976	23.45562	21.48218	19.76201	18.25593	15.76186
51	25.95123	23.62862	21.61748	19.86795	18.33898	15.81308
52	26.16624	23.79576	21.74758	19.96933	18.41807	15.86139
53	26.37499	23.95726	21.87267	20.06634	18.49340	15.90697
54	26.57766	24.11329	21.99296	20.15918	18.56515	15.94898
55	26.77443	24.26405	22.10861	20.24802	18.63347	15.98054
56	26.96546	24.40971	22.21982	20.33303	18.69854	16.00881
57	27.15094	24.55045	22.32675	20.41439	18.76052	16.06492
58	27.33100	24.68642	22.42937	20.49224	18.81954	16.09898
59	27.50583	24.81780	22.52843	20.56673	18.87575	16.13111
60	27.67556	24.94473	22.62249	20.63802	18.92929	16.16143

TABLE LXIV.

ANNUITY WHICH £1 WILL PURCHASE, COMPOUND INTEREST.

Years.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.
1	1.030000	1.035000	1.040000	1.045000	1.050000	1.060000
2	.522610	.526400	.530196	.533997	.537805	.545437
3	.353530	.356934	.360348	.363773	.367208	.374109
4	.269027	.272251	.275490	.278743	.282011	.288591
5	.218354	.221481	.224627	.227791	.230974	.237396
6	.184597	.187668	.190762	.193878	.197016	.203362
7	.160506	.163544	.166609	.169701	.172820	.179135
8	.142456	.145476	.148527	.151609	.154722	.161036
9	.128434	.131446	.134493	.137574	.140690	.147022
10	.117290	.120241	.123291	.126378	.129504	.135868
11	.108077	.111092	.114149	.117248	.120389	.126793
12	.100462	.103484	.106552	.109666	.112825	.119277
13	.094029	.097061	.100148	.103275	.106435	.112960
14	.088526	.091570	.094669	.097820	.101024	.107584
15	.083766	.086825	.089941	.093114	.096342	.102962
16	.079611	.082684	.085820	.089015	.092269	.098952
17	.075932	.079043	.082198	.085417	.088699	.095444
18	.072708	.075816	.078993	.082237	.085546	.092356
19	.069813	.072940	.076138	.079407	.082745	.089620
20	.067215	.070361	.073582	.076876	.080242	.087184
21	.064871	.068036	.071280	.074600	.077996	.085004
22	.062747	.065932	.069198	.072545	.075970	.083045
23	.060813	.064018	.067309	.070682	.074136	.081278
24	.059047	.062273	.065586	.068987	.072471	.079679
25	.057427	.060674	.064012	.067435	.070952	.078226
26	.055938	.059205	.062567	.066021	.069564	.076904
27	.054564	.057852	.061238	.064719	.068292	.075697
28	.053293	.056602	.060013	.063521	.067122	.074592
29	.052114	.055445	.058879	.062414	.066045	.073579
30	.051019	.054371	.057890	.061391	.065051	.072649
31	.049999	.053372	.056855	.060443	.064132	.071752
32	.049046	.052441	.055948	.059563	.063280	.071002
33	.048156	.051572	.055104	.058744	.062490	.070273
34	.047322	.050759	.054315	.057982	.061755	.069598
35	.046539	.049998	.053577	.057270	.061072	.068974
36	.045804	.049284	.052887	.056606	.060434	.068395
37	.045111	.048613	.052239	.055984	.059840	.067857
38	.044459	.047982	.051632	.055402	.059284	.067358
39	.043844	.047387	.051061	.054857	.058764	.066894
40	.043262	.046827	.050523	.054343	.058278	.066462
41	.042712	.046298	.050017	.053861	.057822	.066059
42	.042191	.045798	.049540	.053408	.057395	.065683
43	.041698	.045325	.049090	.052982	.056993	.065333
44	.041230	.044877	.048664	.052581	.056616	.065006
45	.040785	.044453	.048262	.052202	.056262	.064701
46	.040362	.044051	.047882	.051845	.055928	.064415
47	.039960	.043669	.047522	.051507	.055614	.064148
48	.039577	.043306	.047181	.051188	.055318	.063898
49	.039213	.042962	.046857	.050887	.055039	.063664
50	.038865	.042634	.046550	.050602	.054777	.063444
51	.038534	.042322	.046259	.050332	.054529	.063239
52	.038217	.042024	.045982	.050077	.054294	.063046
53	.037915	.041741	.045719	.049835	.054073	.062865
54	.037626	.041471	.045469	.049605	.053864	.062696
55	.037349	.041213	.045231	.049387	.053667	.062537
56	.037084	.040967	.045005	.049181	.053480	.062388
57	.036831	.040732	.044789	.048985	.053303	.062247
58	.036588	.040508	.044584	.048799	.053136	.062116
59	.036356	.040294	.044388	.048622	.052978	.061992
60	.036133	.040092	.044202	.048454	.052828	.061876

TABLE LXV.
PROBABILITIES OF LIFE AT DIFFERENT PLACES.

Age.	Vien- na.	Berlin.	Lon- don.	Nor- wich.	North- amp.	Bres- law.	Edin- burgh.	Brand- enb.	Holy Cross.	Hol- land.	France	Vaud in Switzer
0	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1	542	633	680	798	738	769	814	775	882	804	805	811
2	471	528	548	651	628	658	716	718	762	768	777	765
3	430	485	492	595	585	614	663	687	717	736	750	735
4	400	434	452	566	562	585	625	664	682	709	727	715
5	377	408	426	544	544	563	599	642	659	689	711	701
6	357	387	410	526	530	546	580	622	636	676	697	688
7	344	376	397	511	518	532	564	607	618	664	686	677
8	337	367	388	500	510	523	551	595	604	652	676	667
9	331	361	380	490	504	515	540	585	595	646	667	659
10	326	356	373	481	498	508	532	577	589	639	660	653
11	322	353	367	474	493	502	527	570	585	633	654	648
12	318	350	361	469	488	497	522	564	581	627	649	643
13	314	347	356	464	484	492	516	559	577	621	644	639
14	310	344	351	460	480	488	511	554	573	616	639	635
15	306	341	347	455	475	483	506	549	569	611	635	631
16	302	338	343	451	470	479	501	544	565	606	631	626
17	299	335	338	446	465	474	495	539	560	601	626	622
18	295	332	334	442	459	470	490	535	555	596	621	618
19	291	328	329	437	453	465	485	531	550	590	616	614
20	287	324	325	432	447	461	480	527	545	584	610	610
21	284	320	321	426	440	456	474	522	539	577	604	606
22	280	315	316	421	433	451	469	517	532	571	598	602
23	276	310	310	415	426	446	468	512	525	566	592	597
24	273	305	305	409	419	441	458	507	518	559	586	592
25	269	297	299	404	412	436	453	502	512	551	580	587
26	265	293	294	398	405	431	447	498	506	543	574	582
27	261	287	288	392	398	426	442	495	501	535	568	577
28	256	281	283	385	391	421	437	492	496	526	562	572
29	251	275	278	378	384	415	432	489	491	517	556	567
30	247	269	272	372	378	409	426	486	486	508	550	563
31	243	264	266	366	372	403	421	482	481	499	544	558
32	239	259	260	361	366	397	416	477	476	490	538	553
33	235	254	254	355	360	391	410	472	471	482	532	548
34	231	249	248	350	354	384	405	467	466	474	526	544
35	226	243	242	344	348	377	400	462	460	467	520	539
36	221	237	236	338	342	370	394	456	454	460	514	533
37	216	230	230	333	336	363	388	450	447	453	508	527
38	211	223	224	327	330	356	382	444	440	446	503	520
39	205	216	218	322	324	349	376	438	433	439	497	513
40	199	209	214	317	317	342	369	432	426	432	492	506
41	194	203	207	311	310	335	363	427	418	425	487	500
42	189	197	201	306	303	328	356	422	410	419	482	494
43	185	192	194	300	296	321	349	417	401	413	476	488
44	181	187	187	294	289	314	341	412	393	407	471	482
45	176	182	180	287	282	307	333	407	386	400	466	476
46	171	177	174	281	275	299	325	400	379	393	460	469
47	165	172	167	274	268	291	317	394	372	386	455	461
48	159	167	159	268	261	283	309	388	365	378	449	451
49	153	162	153	261	254	275	301	381	359	370	443	441
50	147	157	147	255	247	267	293	374	353	362	436	431
51	142	152	141	248	239	259	286	367	347	354	429	422
52	137	147	135	242	232	250	278	359	340	342	422	414
53	133	142	130	235	225	241	270	351	333	336	414	406
54	128	137	125	228	218	232	263	343	326	327	406	397
55	123	132	120	221	211	224	256	334	318	318	397	388
56	117	127	116	213	204	216	250	324	310	309	388	377
57	111	121	111	206	197	209	243	314	301	300	379	364
58	106	115	106	199	190	201	235	304	292	291	369	348
59	101	109	101	191	183	193	227	293	283	282	359	331

TABLE LXV.

PROBABILITIES OF LIFE, AT DIFFERENT PLACES.

Age.	Vien- na.	Berlin.	Lon- don.	Nor- wich.	North- ampt.	Bres- law.	Edin- burgh.	Brand- enb.	Holy Cross.	Hol- land.	France	Vaud in Switzer.
60	96	103	96	184	176	186	219	282	273	273	349	314
61	91	97	92	177	169	178	210	271	263	264	339	299
62	87	92	87	169	162	170	201	260	253	255	329	286
63	82	88	83	161	155	163	191	248	243	245	318	274
64	77	84	78	153	148	155	182	236	233	235	307	262
65	72	80	74	144	141	147	173	224	223	225	296	250
66	67	75	70	136	134	140	163	213	213	216	285	236
67	62	70	65	128	127	132	154	202	203	205	273	220
68	57	65	61	119	120	124	145	190	193	195	260	202
69	52	60	56	111	131	117	135	178	182	185	246	184
70	48	55	52	103	106	109	126	166	171	175	232	168
71	44	51	47	94	99	101	117	153	161	165	218	153
72	40	47	43	86	92	93	108	138	151	155	195	140
73	36	43	39	79	85	85	100	122	142	145	188	129
74	33	39	35	71	78	77	92	107	134	135	173	119
75	30	35	32	64	71	69	84	93	126	125	153	109
76	27	32	28	57	64	61	76	80	119	114	141	98
77	24	29	25	50	58	59	68	68	112	103	129	85
78	21	26	22	43	52	45	60	59	105	92	115	71
79	18	23	19	37	46	38	52	51	98	82	102	58
80	16	20	17	32	40	32	45	44	90	72	88	46
81	14	18	14	27	34	26	39	38	81	62	75	36
82	12	16	12	23	28	22	33	32	71	53	63	29
83	10	14	10	19	23	18	28	25	61	45	53	24
84	8	12	8	16	19	15	24	21	51	38	44	20
85	7	10	7	13	16	12	20	15	41	31	36	17
86	6	8	6	10	13	9	16	11	32	25	28	14
87	5	7	5	8	11	6	12	8	24	19	21	11
88	4	6	4	6	8	4	9	6	17	14	16	9
89	3	5	3	5	6	2	7	4	11	10	12	7
90	2	4	2	4	4	1	4	3	7	7	8	5

TABLE LXVI.

VALUE OF AN ANNUITY ON A SINGLE LIFE.

Age.	Years value at			Age.	Years value at			Age.	Years value at		
	3p.cent.	4p.cent.	5p.cent.		3p.cent.	4p.cent.	5p.cent.		3p.cent.	4p.cent.	5p.cent.
6	18.8	16.2	14.1	30	15.0	13.1	11.6	53	10.7	9.6	8.8
7	18.9	16.3	14.2	31	14.8	12.9	11.4	54	10.5	9.4	8.6
8	19.0	16.4	14.3	32	14.6	12.7	11.3	55	10.3	9.3	8.5
9	19.0	16.4	14.3	33	14.4	12.6	11.2	56	10.1	9.1	8.4
10	19.0	16.4	14.3	34	14.2	12.4	11.0	57	9.9	8.9	8.2
11	18.9	16.3	14.2	35	14.1	12.3	10.9	58	9.6	8.7	8.1
12	18.7	16.2	14.1	36	13.9	12.1	10.8	59	9.3	8.6	8.0
13	18.5	16.0	14.0	37	13.7	11.9	10.6	60	9.2	8.4	7.9
14	18.3	15.8	13.9	38	13.5	11.8	10.5	61	8.9	8.2	7.7
15	18.1	15.6	13.7	39	13.3	11.6	10.4	62	8.7	8.1	7.6
16	17.9	15.4	13.5	40	13.2	11.5	10.3	63	8.5	7.9	7.4
17	17.6	15.2	13.4	41	13.0	11.4	10.2	64	8.3	7.7	7.3
18	17.4	15.0	13.2	42	12.8	11.2	10.1	65	8.0	7.5	7.1
19	17.2	14.8	13.0	43	12.6	11.1	10.0	66	7.8	7.3	6.9
20	17.0	14.7	12.9	44	12.5	11.0	9.9	67	7.6	7.1	6.7
21	16.8	14.5	12.7	45	12.3	10.8	9.8	68	7.4	6.9	6.6
22	16.5	14.3	12.6	46	12.1	10.7	9.7	69	7.1	6.7	6.4
23	16.3	14.1	12.4	47	11.9	10.5	9.5	70	6.9	6.5	6.2
24	16.1	14.0	12.3	48	11.8	10.4	9.4	71	6.7	6.3	6.0
25	15.9	13.8	12.1	49	11.6	10.2	9.3	72	6.5	6.1	5.8
26	15.6	13.6	12.0	50	11.4	10.1	9.2	73	6.2	5.9	5.6
27	15.4	13.4	11.8	51	11.2	9.9	9.0	74	5.9	5.6	5.4
28	15.2	13.2	11.7	52	11.0	9.8	8.9	75	5.6	5.4	5.2

TABLE LXVII.

VALUE OF AN ANNUITY ON TWO JOINT LIVES.

Age of the		Value at			Age of the		Value at		
Younger.	Elder.	3 p. cent.	4 p. cent.	5 p. cent.	Younger.	Elder.	3 p. cent.	4 p. cent.	5 per cent.
10	10	14.7	13.0	11.6	30	30	10.8	9.6	8.6
	15	14.3	12.7	11.3		35	10.3	9.2	8.3
	20	13.8	12.2	10.8		40	9.7	8.8	8.0
	25	13.1	11.6	10.2		45	9.1	8.3	7.6
	30	12.3	10.9	9.7		50	8.5	7.8	7.2
	35	11.5	10.2	9.1		55	7.9	7.3	6.7
	40	10.7	9.6	8.6		60	7.2	6.7	6.2
	45	10.0	9.0	8.1		65	6.5	6.1	5.7
	50	9.3	8.4	7.6		70	5.8	5.5	5.2
	55	8.6	7.8	7.1		75	5.1	4.9	4.7
	60	7.8	7.2	6.6	35	35	9.9	8.8	8.0
	65	6.9	6.5	6.1		40	9.4	8.5	7.7
15	70	6.1	5.8	5.5		45	8.9	8.1	7.4
	75	5.3	5.1	4.9		50	8.3	7.6	7.0
	15	13.9	12.3	11.0		55	7.7	7.1	6.6
	20	13.3	11.8	10.5		60	7.1	6.5	6.1
	25	12.6	11.2	10.1		65	6.4	6.0	5.6
	30	11.9	10.6	9.5		70	5.7	5.4	5.1
	35	11.2	10.0	9.0	40	75	5.0	4.8	4.6
	40	10.4	9.4	8.5		40	9.1	8.1	7.3
	45	9.6	8.8	8.0		45	8.7	7.8	7.1
	50	8.9	8.2	7.5		50	8.2	7.4	6.8
	55	8.2	7.6	7.0		55	7.6	6.9	6.4
	60	7.5	7.0	6.5		60	7.0	6.4	6.0
20	65	6.8	6.4	6.0	45	65	6.4	5.9	5.5
	70	6.0	5.7	5.4		70	5.7	5.4	5.1
	75	5.2	5.0	4.8		75	5.0	4.8	4.6
	20	12.8	11.3	10.1		45	8.3	7.4	6.7
	25	12.2	10.8	9.7		50	7.9	7.1	6.5
	30	11.6	10.3	9.2	50	55	7.4	6.7	6.2
	35	10.9	9.8	8.8		60	6.8	6.3	5.8
	40	10.2	9.2	8.4		65	6.3	5.8	5.4
	45	9.5	8.6	7.9		70	5.6	5.3	5.0
	50	8.8	8.0	7.4		75	4.9	4.7	4.5
	55	8.1	7.5	6.9	55	50	7.6	6.8	6.2
25	60	7.4	6.9	6.4		55	7.2	6.5	6.0
	65	6.7	6.3	5.9		60	6.7	6.1	5.7
	70	6.0	5.7	5.4		65	6.2	5.7	5.3
	75	5.2	5.0	4.8		70	5.5	5.2	4.9
	25	11.8	10.5	9.4		75	4.8	4.6	4.4
	30	11.3	10.1	9.0	60	55	6.9	6.2	5.7
	35	10.7	9.6	8.6		60	6.5	5.9	5.5
	40	10.0	9.1	8.2		65	6.0	5.6	5.2
	45	9.4	8.5	7.8		70	5.4	5.1	4.8
	50	8.7	7.9	7.3		75	4.7	4.5	4.3
	55	8.0	7.4	6.8	65	60	6.1	5.6	5.2
	60	7.3	6.8	6.3		65	5.7	5.3	4.9
	65	6.6	6.2	5.8		70	5.2	4.9	4.6
	70	5.9	5.6	5.3		75	4.6	4.4	4.2
	75	5.1	4.9	4.7	70	65	5.4	5.0	4.7
30	70	5.9	5.6	5.3		70	4.9	4.6	4.4
	75	5.1	4.9	4.7		75	4.4	4.2	4.0
	70	5.9	5.6	5.3	75	70	4.6	4.4	4.2
	75	5.1	4.9	4.7		75	4.2	4.0	3.9
	70	5.9	5.6	5.3		75	3.8	3.7	3.6
	75	5.1	4.9	4.7		75	3.8	3.7	3.6

TABLE LXVIII.

VALUE OF AN ANNUITY ON THE LONGEST OF TWO GIVEN LIVES.

Age of the		Value, or year's purchase at			Age of the		Value, or year's purchase at		
Younger.	Elder.	3 p. cent.	4 p. cent.	5 p. cent.	Younger.	Elder.	3 p. cent.	4 p. cent.	5 per cent.
10	10	23.4	19.9	17.1	30	30	19.3	16.6	14.5
	15	22.9	19.5	16.8		35	18.8	16.2	14.2
	20	22.5	19.1	16.6		40	18.4	15.9	14.0
	25	22.2	18.8	16.4		45	18.1	15.6	13.8
	30	21.9	18.6	16.2		50	17.8	15.4	13.6
	35	21.6	18.4	16.1		55	17.4	15.1	13.4
	40	21.4	18.3	16.0		60	17.0	14.8	13.2
	45	21.2	18.2	15.9		65	16.6	14.5	12.9
	50	20.9	18.0	15.8		70	16.1	14.1	12.6
	55	20.7	17.8	15.7		75	15.6	13.7	12.2
	60	20.4	17.6	15.5	35	35	18.3	15.8	13.8
	65	20.1	17.4	15.3		40	17.8	15.4	13.5
	70	19.8	17.2	15.1		45	17.4	15.1	13.3
	75	19.5	16.9	14.8		50	17.1	14.8	13.1
15	15	22.8	19.3	16.7		55	16.7	14.5	12.9
	20	22.3	18.9	16.4		60	16.3	14.2	12.7
	25	21.9	18.6	16.2		65	15.8	13.8	12.4
	30	21.6	18.3	16.0		70	15.3	13.4	12.0
	35	21.3	18.1	15.9		75	14.8	13.0	11.6
	40	21.1	17.9	15.7	40	40	17.3	15.0	13.3
	45	20.9	17.8	15.6		45	16.8	14.6	13.0
	50	20.7	17.6	15.4		50	16.3	14.0	12.7
	55	20.4	17.4	15.3		55	15.9	13.9	12.4
	60	20.1	17.2	15.2		60	15.4	13.5	12.1
	65	19.8	16.9	15.0		65	14.9	13.1	11.8
	70	19.4	16.6	14.7		70	14.5	12.7	11.4
	75	18.9	16.3	14.4		75	14.0	12.3	11.0
20	20	21.6	18.3	15.8	45	45	16.2	14.2	12.8
	25	21.1	17.9	15.5		50	15.7	13.8	12.5
	30	20.7	17.6	15.3		55	15.2	13.4	12.1
	35	20.4	17.4	15.1		60	14.7	12.9	11.7
	40	20.1	17.2	15.0		65	14.1	12.5	11.4
	45	19.9	17.0	14.9		70	13.6	12.0	11.0
	50	19.6	16.8	14.7		75	13.1	11.6	10.6
	55	19.4	16.6	14.5	50	50	15.0	13.3	12.1
	60	19.1	16.3	14.3		55	14.5	12.9	11.7
	65	18.7	16.0	14.1		60	13.9	12.4	11.3
	70	18.2	15.7	13.8		65	13.3	12.0	10.9
	75	17.7	15.3	13.5		70	12.8	11.5	10.5
						75	12.3	11.0	10.1
25	25	20.3	17.4	15.1	55	55	13.6	12.4	11.3
	30	19.8	17.0	14.9		60	13.0	11.9	10.9
	35	19.4	16.7	14.7		65	12.4	11.3	10.5
	40	19.2	16.5	14.5		70	11.8	10.8	10.0
	45	18.9	16.3	14.3		75	11.3	10.3	9.5
	50	18.7	16.1	14.2	60	60	12.2	11.2	10.5
	55	18.4	15.9	14.0		65	11.5	10.6	10.0
	60	18.0	15.6	13.8		70	10.9	10.1	9.5
	65	17.6	15.3	13.6		75	10.3	9.5	9.0
	70	17.2	15.0	13.3	65	65	10.7	10.0	9.4
	75	16.7	14.6	12.9		70	10.0	9.4	8.9
						75	9.3	8.7	8.3
					70	70	9.2	8.6	8.2
						75	8.4	7.9	7.6
					75	75	7.6	7.2	6.9

TABLE LXIX.

TO REDUCE ENGLISH CHAINS TO FEET.

Chains.	Feet.	Links.	Feet.
1	65.00	1	0.66
2	132.00	2	1.32
3	198.00	3	1.98
4	264.00	4	2.64
5	330.00	5	3.30
6	396.00	6	3.96
7	462.00	7	4.62
8	528.00	8	5.28
9	594.00	9	5.94
10	660.00	10	6.60
20	1320.00	15	9.90
30	1980.00	20	13.20
40	2640.00	30	19.80
50	3300.00	40	26.40
60	3960.00	50	33.00
70	4620.00	60	39.60
80	5280.00	70	46.20
90	5940.00	80	52.80
100	6600.00	90	59.40
200	13200.00	100	66.00

TABLE LXX.

24.

TO REDUCE SCOTS CHAINS TO FEET

Chains.	Feet.	Links.	Feet.
1	74.40	1	.74
2	148.80	2	1.49
3	223.20	3	2.23
4	297.60	4	2.98
5	372.00	5	3.72
6	446.40	6	4.46
7	520.80	7	5.21
8	595.20	8	5.95
9	669.60	9	6.70
10	744.00	10	7.44
20	1488.00	15	11.16
30	2232.00	20	14.88
40	2976.00	30	22.32
50	3720.00	40	29.76
60	4464.00	50	37.20
70	5208.00	60	44.64
80	5952.00	70	52.08
90	6696.00	80	59.52
100	7440.00	90	66.96
200	14880.00	100	74.40

TABLE LXI.

TO REDUCE ENGLISH TO SCOTS ACRES.

E. Acres.	Scots Acres.	E. R. & P.	Scots Rds. &c.
1	0 3 5.9	Roods.	
2	1 2 11.8	1	0 0 31.5
3	2 1 17.7	2	0 1 23.0
4	3 0 23.6	3	0 2 14.4
5	3 3 29.5	Poles.	
6	4 2 35.5	1	0 0 0.8
7	5 2 1.4	2	0 0 1.6
8	6 1 7.3	3	0 0 2.4
9	7 0 13.2	4	0 0 3.1
10	7 3 19.1	5.	0 0 3.9
20	15 2 38.2	6	0 0 4.7
30	23 2 17.3	7	0 0 5.5
40	31 1 36.4	8	0 0 6.3
50	39 1 15.5	9	0 0 7.1
60	47 0 34.6	10	0 0 7.9
70	55 0 13.7	15	0 0 11.8
80	62 3 32.8	20	0 0 15.7
90	70 3 12.0	25	0 0 19.7
100	78 2 31.1	30	0 0 23.6
200	157 1 22.1	35	0 0 27.5

TABLE LXXII.

TO REDUCE SCOTS TO ENGLISH ACRE

S. Acres.	English Acres.	S. R. & F. Eng. Rds. &
1	1 1 3.3	Roads.
2	2 2 6.6	1
3	3 3 10.0	2
4	5 0 13.3	3
5	6 1 16.6	Fails.
6	7 2 19.9	1
7	8 3 23.2	2
8	10 0 26.6	3
9	11 1 29.9	4
10	12 2 33.2	5
20	25 1 26.4	6
30	38 0 19.6	7
40	50 3 12.8	8
50	63 2 5.9	9
60	76 0 39.1	10
70	88 3 32.3	15
80	101 2 25.5	20
90	114 1 18.7	25
100	127 0 11.9	30
200	254 0 23.8	35

TABLE LXXIII.

TO REDUCE A DISTANCE MEASURED ON AN INCLINED PLANE TO HORIZONTAL MEASURE.

Angle.	Red.	Angle.	Red.	Angle.	Red.	Angle.	Red.	Angle.	Red.	Angle.	Red.
0°20'	.0000	4°20'	.0029	8°20'	.0106	12°20'	.0231	16°20'	.0404	20°20'	.0623
0 40	.0001	4 40	.0033	8 40	.0114	12 40	.0243	16 40	.0420	20 40	.0643
1 0	.0002	5 0	.0038	9 0	.0123	13 0	.0256	17 0	.0437	21 0	.0664
1 20	.0003	5 20	.0043	9 20	.0132	13 20	.0270	17 20	.0454	21 20	.0685
1 40	.0004	5 40	.0049	9 40	.0142	13 40	.0283	17 40	.0472	21 40	.0707
2 0	.0006	6 0	.0055	10 0	.0152	14 0	.0297	18 0	.0489	22 0	.0728
2 20	.0008	6 20	.0061	10 20	.0162	14 20	.0311	18 20	.0508	22 20	.0750
2 40	.0011	6 40	.0068	10 40	.0173	14 40	.0326	18 40	.0526	22 40	.0772
3 0	.0014	7 0	.0075	11 0	.0184	15 0	.0341	19 0	.0545	23 0	.0795
3 20	.0017	7 20	.0082	11 20	.0195	15 20	.0356	19 20	.0564	23 20	.0818
3 40	.0020	7 40	.0089	11 40	.0207	15 40	.0372	19 40	.0583	23 40	.0841
4 0	.0024	8 0	.0097	12 0	.0219	16 0	.0387	20 0	.0603	24 0	.0865

TABLE LXXIV.

ANGLES CORRESPONDING TO CHORDS, OR SUBTENSES,
THE RADIUS BEING 100.

Angle.	Chd.	Angle.	Chd.	Angle.	Chd.	Angle.	Chd.	Angle.	Chd.	Angle.	Chd.	Angle.	Chd.	Angle.	Chd.
1 0° 34'	19	10° 54'	37	21° 19'	55	31° 56'	73	42° 49'	91	54° 08'	109	66° 09'	127	78° 50'	
2 1 9	20	11 29	38	21 54	56	32 31	74	43 26	92	54 46	110	66 44	128	79 35	
3 1 43	21	12 3	39	22 29	57	33 7	75	44 3	93	55 25	111	67 26	129	80 20	
4 2 18	22	12 38	40	23 4	58	33 43	76	44 40	94	56 4	112	68 7	130	81 5	
5 2 52	23	13 12	41	23 40	59	34 19	77	45 17	95	56 43	113	68 48	131	81 50	
6 3 26	24	13 47	42	24 15	60	34 55	78	45 54	96	57 22	114	69 30	132	82 36	
7 4 1	25	14 22	43	24 50	61	35 31	79	46 32	97	58 2	115	70 12	133	83 22	
8 4 35	26	14 56	44	25 25	62	36 7	80	47 10	98	58 41	116	70 54	134	84 8	
9 5 10	27	15 31	45	26 0	63	36 43	81	47 47	99	59 20	117	71 36	135	84 54	
0 5 44	28	16 6	46	26 36	64	37 20	82	48 25	100	60 0	118	72 19	136	85 41	
1 6 18	29	16 40	47	27 11	65	37 53	83	49 2	101	60 40	119	73 2	137	86 28	
2 6 53	30	17 15	48	27 46	66	38 32	84	49 40	102	61 20	120	73 44	138	87 16	
3 7 27	31	17 50	49	28 22	67	39 9	85	50 18	103	62 0	121	74 28	139	88 4	
4 8 2	32	18 25	50	28 57	68	39 45	86	50 56	104	62 40	122	75 11	140	88 52	
5 8 36	33	19 0	51	29 33	69	40 22	87	51 34	105	63 20	123	75 54	141	89 40	
6 9 11	34	19 35	52	30 8	70	40 58	88	52 12	106	64 0	124	76 38	142	90 28	
7 9 45	35	20 10	53	30 44	71	41 35	89	52 51	107	64 41	125	77 22	143	91 17	
8 10 20	36	20 44	54	31 20	72	42 12	90	53 29	108	65 22	126	78 6	144	92 6	

TABLE LXXV.

REDUCTION OF THE APPARENT TO THE TRUE LEVEL.

Part I. The dist. being expressed in Eng. Chains.								Part II. The dist. being expressed in Scots Chains							
h.	Red.	Ch.	Red.	Ch.	Red.	Ch.	Red.	Ch.	Red.	Ch.	Red.	Ch.	Red.	Ch.	Red.
1	0.00	14	0.24	27	0.91	40	2.00	1	0.00	14	0.31	27	1.16	40	2.54
2	0.00	15	0.28	28	0.98	45	2.53	2	0.00	15	0.36	28	1.25	45	3.22
3	0.01	16	0.32	29	1.05	50	3.12	3	0.01	16	0.41	29	1.34	50	3.97
4	0.02	17	0.36	30	1.12	55	3.78	4	0.02	17	0.46	30	1.43	55	4.81
5	0.03	18	0.40	31	1.19	60	4.50	5	0.04	18	0.51	31	1.53	60	5.72
6	0.04	19	0.45	32	1.27	65	5.31	6	0.06	19	0.57	32	1.63	65	6.71
7	0.06	20	0.50	33	1.35	70	6.12	7	0.08	20	0.63	33	1.73	70	7.79
8	0.08	21	0.55	34	1.44	75	7.03	8	0.10	21	0.70	34	1.84	75	8.94
9	0.10	22	0.60	35	1.53	80	8.00	9	0.13	22	0.77	35	1.95	80	10.17
10	0.12	23	0.66	36	1.62	85	9.03	10	0.16	23	0.84	36	2.06	85	11.48
11	0.15	24	0.72	37	1.71	90	10.12	11	0.19	24	0.91	37	2.18	90	12.87
12	0.18	25	0.78	38	1.80	95	11.28	12	0.23	25	0.99	38	2.29	95	14.34
13	0.21	26	0.84	39	1.90	100	12.50	13	0.27	26	1.07	39	2.42	100	15.89

TABLE LXXVI.

PROPERTIES OF THE PLATONIC BODIES.

Name.	No. of Sides.	The side of the Platonic body being 1.		The diam. of a Sphere being 1, the side of one of the Platonic bodies that may be inscrib. may be circums. is = to the in the Sphere, is about the sphere, is	
		Surface.	Solidity.		
Tetraedron	4	1.7320508	0.1178513	0.816497	2.44948
Hexaedron	6	6.0000000	1.0000000	0.577350	1.00000
Octaedron	8	3.4641016	0.4714045	0.707107	1.22474
Dodecaedron	12	20.6457788	7.6631189	0.525731	0.66158
Icosaedron	20	8.6602540	2.1816950	0.356822	0.44903

TABLE LXXVII.

Areas of reg. Polygons, the side being 1.

Name.	Nº. of sid.	Area.
Equilat. trian.	3	0.4330127
Square - -	4	1.0000000
Pentagon - -	5	1.7204774
Hexagon - -	6	2.5980762
Heptagon - -	7	3.6399124
Octagon - -	8	4.8284271
Nonagon - -	9	6.1818242
Decagon - -	10	7.6942088
Undecagon.	11	9.3656399
Dodecagon -	12	11.1961524

TABLE LXXVIII.

To reduce English to French Measure, and conversely.

P.I. To red. Eng. to Fr. mea.		To red. French to Eng. mea.	
Eng. mea.	French mea.	French mea.	English mea.
1	0.938906	1	1.06575
2	1.876612	2	2.13150
3	2.814916	3	3.19725
4	3.753224	4	4.26300
5	4.691530	5	5.32875
6	5.629836	6	6.39450
7	6.568142	7	7.46025
8	7.506448	8	8.52600
9	8.444754	9	9.59175

TABLE LXXIX.

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THE MEASURES OF THE PRINCIPAL LINES AND ANGLES IN REGULAR
FORTRESSES, FROM FOUR TO TWELVE SIDES INCLUSIVE.

Names of Sides and Angles.	Names of Polygons.									
	Square	Pentag	Hexag	Hepta.	Octag.	Nonag.	Decag	Undec.	Dodeca.	
Exterior side, in toises -	180.	180.	180.	180.	180.	180.	180.	180.	180.	
Radius of exterior side -	127.3	153.1	180.0	207.4	235.2	263.1	291.2	319.4	347.7	
Interior side -	115.3	123.9	130.6	136.2	140.0	142.9	144.3	146.3	148.1	
Radius of interior side -	81.7	105.4	130.6	157.0	183.0	208.9	233.4	259.7	286.1	
Capital -	45.6	47.7	49.3	50.5	52.2	54.2	57.8	59.7	61.7	
Normal -	22.5	27.0	30.0	32.0	34.0	36.0	39.0	41.0	43.0	
Curtin -	78.0	77.1	76.4	75.9	75.3	74.7	73.7	71.4	69.3	
Flank -	20.3	24.5	27.3	29.2	31.1	33.0	35.8	37.0	38.1	
Face -	50.0	50.0	50.0	50.0	50.0	50.0	50.0	51.0	52.0	
Line of Defence -	133.0	134.2	135.1	135.8	136.4	137.2	138.2	138.2	138.2	
Demigorge -	18.7	23.4	27.1	30.2	32.4	34.1	35.3	37.4	39.4	
Angle of the Center -	90° 0'	72° 0'	60° 0'	51° 26'	45° 0'	40° 0'	36° 0'	32° 44'	30° 0'	
Angle of the Polygon -	90 0	108 0	120 0	128 34	135 0	140 0	144 0	147 16	150 0	
Angle of the Curtin -	97 1	98 21	99 13	99 47	100 21	100 54	101 43	102 15	102 46	
Angle of the Shoulder -	111 9	115 3	117 39	119 21	121 3	122 42	125 9	126 45	128 18	
Ang. of Bast., or Flank. ang.	61 56	74 36	83 8	89 26	93 36	96 24	97 8	98 16	98 56	
Diminished Angle -	14 2	16 42	18 26	19 34	20 42	21 48	23 26	24 30	25 32	
Exterior Flanking Angle -	151 56	146 36	143 8	140 52	138 36	136 24	133 8	131 0	128 56	
Breadth of Foss. in Toises	15	15	18	20	20	20	21	22	23	

TABLE LXXX.

TO REDUCE THE DIVISIONS OF THE 96 ARCH OF AN
ASTRONOMICAL QUADRANT, TO DEGREES.

prim. Div.	Degrees.	prim Div.	Degrees.	prim. Div.	Degrees.	Sub-Parts of a div. Degree.
1	0° 56' 15"	37	34° 41' 15"	73	68° 26' 15"	Sub-dividing Scale.
2	1 52 30	38	35 37 30	74	69 22 30	1 0' 13".18
3	2 48 45	39	36 33 45	75	70 18 45	2 0 26.37
4	3 45 0	40	37 30 0	76	71 15 0	3 0 39.55
5	4 41 15	41	38 26 15	77	72 11 15	4 0 52.73
6	5 37 30	42	39 22 30	78	73 7 30	5 1 5.92
7	6 33 45	43	40 18 45	79	74 3 45	6 1 19.10
8	7 30 0	44	41 15 0	80	75 0 0	7 1 32.28
9	8 26 15	45	42 11 15	81	75 56 15	8 1 45.47
10	9 22 30	46	43 7 30	82	76 52 30	9 1 58.65
11	10 18 45	47	44 3 45	83	77 48 45	10 2 11.84
12	11 15 0	48	45 0 0	84	78 45 0	11 2 25.02
13	12 11 15	49	45 56 15	85	79 41 15	12 2 38.20
14	13 7 30	50	46 52 30	86	80 37 30	13 2 51.39
15	14 3 45	51	47 48 45	87	81 33 45	14 3 4.57
16	15 0 0	52	48 45 0	88	82 30 0	15 3 17.75
17	15 56 15	53	49 41 15	89	83 26 15	16 3 30.94
18	16 52 30	54	50 37 30	90	84 22 30	17 3 44.12
19	17 48 45	55	51 33 45	91	85 18 45	18 3 57.30
20	18 45 0	56	52 30 0	92	86 15 0	19 4 10.49
21	19 41 15	57	53 26 15	93	87 11 15	20 4 23.67
22	20 37 30	58	54 22 30	94	88 7 30	21 4 36.85
23	21 33 45	59	55 18 45	95	89 3 45	22 4 50.04
24	22 30 0	60	56 15 0	96	90 0 0	23 5 3.22
25	23 26 15	61	57 11 15	Sub-divisions.		24 5 16.41
26	24 22 30	62	58 7 30	Sub-Parts of a div. Degree.		25 5 29.59
27	25 18 45	63	59 3 45	1	7' 1".88	26 5 42.77
28	26 15 0	64	60 0 0			27 5 55.95
29	27 11 15	65	60 56 15	2	14 3.75	28 6 9.14
30	28 7 30	66	61 52 30	3	21 5.63	29 6 22.32
31	29 3 45	67	62 48 45	4	28 7.50	30 6 35.51
32	30 0 0	68	63 45 0	5	35 9.38	31 6 48.69
33	30 56 15	69	64 41 15	6	42 11.25	32 7 1.88
34	31 52 30	70	65 37 30	7	49 13.13	
35	32 48 45	71	66 33 45	8	56 15.00	
36	33 45 0	72	67 30 0			

TABLE LXXXI.

CLIMATES.

Hour Climates.

Climate	h. d.	Latitud. of end.	Breadth
1	12h 30'	8° 34'	8° 34'
2	13 0	16 44	8 10
3	13 30	24 12	7 28
4	14 0	30 48	6 36
5	14 30	36 31	5 43
6	15 0	41 24	4 53
7	15 30	45 32	4 8
8	16 0	49 2	3 30
9	16 30	52 0	2 58
10	17 0	54 31	2 31
11	17 30	56 38	2 7
12	18 0	58 27	1 49
13	18 30	60 0	1 33
14	19 0	61 19	1 19
15	19 30	62 26	1 7
16	20 0	63 23	0 57
17	20 30	64 10	0 47
18	21 0	64 50	0 40
19	21 30	65 22	0 32
20	22 0	65 48	0 26
21	22 30	66 7	0 19
22	23 0	66 21	0 14
23	23 30	66 29	0 8
24	24 0	66 32	0 3

Month Climates.

No. of Climate.	Leng. of long. day at end.	Lati- tude at end.	Breadth
25	1.mo	67 18	0 46
26	2.	69 33	2 15
27	3.	73 5	3 32
28	4.	77 39	4 84
29	5.	82 53	5 19
30	6.	90 0	7 2

TABLE LXXXII.

TO FIND THE NUMBER OF DAYS CONTAINED BETWEEN ANY TWO DAYS
IN THE YEAR.

Days.	Jan.	Feb.	March	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1	32	60	91	121	152	182	213	244	274	305	335
2	2	33	61	92	122	153	183	214	245	275	306	336
3	3	34	62	93	123	154	184	215	246	276	307	337
4	4	35	63	94	124	155	185	216	247	277	308	338
5	5	36	64	95	125	156	186	217	248	278	309	339
6	6	37	65	96	126	157	187	218	249	279	310	340
7	7	38	66	97	127	158	188	219	250	280	311	341
8	8	39	67	98	128	159	189	220	251	281	312	342
9	9	40	68	99	129	160	190	221	252	282	313	343
10	10	41	69	100	130	161	191	222	253	283	314	344
11	11	42	70	101	131	162	192	223	254	284	315	345
12	12	43	71	102	132	163	193	224	255	285	316	346
13	13	44	72	103	133	164	194	225	256	286	317	347
14	14	45	73	104	134	165	195	226	257	287	318	348
15	15	46	74	105	135	166	196	227	258	288	319	349
16	16	47	75	106	136	167	197	228	259	289	320	350
17	17	48	76	107	137	168	198	229	260	290	321	351
18	18	49	77	108	138	169	199	230	261	291	322	352
19	19	50	78	109	139	170	200	231	262	292	323	353
20	20	51	79	110	140	171	201	232	263	293	324	354
21	21	52	80	111	141	172	202	233	264	294	325	355
22	22	53	81	112	142	173	203	234	265	295	326	356
23	23	54	82	113	143	174	204	235	266	296	327	357
24	24	55	83	114	144	175	205	236	267	297	328	358
25	25	56	84	115	145	176	206	237	268	298	329	359
26	26	57	85	116	146	177	207	238	269	299	330	360
27	27	58	86	117	147	178	208	239	270	300	331	361
28	28	59	87	118	148	179	209	240	271	301	332	362
29	29		88	119	149	180	210	241	272	302	333	363
30	30		89	120	150	181	211	242	273	303	334	364
31	31		90		151		212	243		304		365

TABLE LXXXIII.

CONTAINING THE NUMBER OF DAYS BETWEEN THE OLD AND NEW STYLE,
IN DIFFERENT PERIODS.

Yrs. bef. Christ, N. S.	Days diff.	Years bef. Christ, N. S.	Days diff.	Years bef. Christ, N. S.	Days diff.	Years aft. Christ, N. S.	Days diff.	Yrs. aft. Christ, N. S.	Days diff.	Yrs. aft. Christ, N. S.	Days diff.
L. 6000	-47	L. 4000	-32	L. 2000	-17	L. 0	-2	L. 2000	+13	L. 4000	+28
5900	46	3900	31	1900	16	Aft. 100	1	2100	14	4100	29
5800	45	3800	30	1800	15	200	+ 0	2200	15	4200	30
5700	44	3700	29	1700	14	300	1	2300	16	4300	31
L. 5600	44	L. 3600	29	L. 1600	14	L. 400	1	L. 2400	16	L. 4400	31
5500	43	3500	28	1500	13	500	2	2500	17	4500	32
5400	42	3400	27	1400	12	600	3	2600	18	4600	33
5300	41	3300	26	1300	11	700	4	2700	19	4700	34
L. 5200	41	L. 3200	26	L. 1200	11	L. 800	4	L. 2800	19	L. 4800	34
5100	40	3100	25	1100	10	900	5	2900	20	4900	35
5000	39	3000	24	1000	9	1000	6	3000	21	5000	36
4900	38	2900	23	900	8	1100	7	3100	22	5100	37
L. 4800	38	L. 2800	23	L. 800	8	L. 1200	7	L. 3200	22	L. 5200	37
4700	37	2700	22	700	7	1300	8	3300	23	5300	38
4600	36	2600	21	600	6	1400	9	3400	24	5400	39
4500	35	2500	20	500	5	1500	10	3500	25	5500	40
L. 4400	35	L. 2400	20	L. 400	5	L. 1600	10	L. 3600	25	L. 5600	40
4300	34	2300	19	300	4	1700	11	3700	26	5700	41
4200	33	2200	18	200	3	1800	12	3800	27	5800	42
4100	32	2100	17	100	2	1900	13	3900	28	5900	43

TABLE LXXXIV. WEIGHTS AND MEASURES.

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WEIGHTS.

TROY WEIGHT USED BY

GOLDSMITHS.

24 Grains make 1 Pennyweight, marked, dwt.
20 Pennywts. 1 Ounce - - oz.
12 Ounces = 1 Pound - - lb.

APOTHECARIES.

20 Grains make 1 Scruple, marked \mathfrak{S}
3 Scruples = 1 Dram - - $\frac{3}{4}$
8 Drams = 1 Ounce - - $\frac{8}{16}$
12 Ounces = 1 Pound - - lb.

AVOIRDUPOIS WEIGHT.

16 Drams make 1 Ounce
16 Ounces = 1 Pound
28 Pounds = 1 Quarter
4 Quarters = 1 Hundred weight
20 Hundred weight 1 Ton.

WOOL WEIGHT.

7 Pounds make 1 Clove
2 Cloves = 1 Stone
2 Stones = 1 Tod
6 $\frac{1}{2}$ Tods = 1 Wey
2 Weys = 1 Sack
12 Sacks = 1 Last.

COMPARISON OF TROY AND AVOIRDUPOIS WEIGHTS.

175 Troy Pounds are = to 144 Avoird. Pounds
175 Troy Ounces are = to 192 Avoird. Ounces
1 Troy Pound contains 5760 Grains
1 Avoirdup. Pound contains 7000 Grains
1 Troy Ounce contains 480 Grains
1 Avoirdupois Ounce contains 437.5 Grains
1 Avoirdupois Dram contains 27.34375 gr.
1 Troy lb. = 13oz. 2.651428576 drams Avoird.
1 Avoird. lb. = 11lb. 2oz. 11 dwts. 16 gr. Troy.

HAY WEIGHT.

14 Pounds make 1 Stone
40 Pounds of Straw = 1 Truss
56 Pounds of Old Hay = 1 Truss
60 Pounds of New Hay = 1 Truss
36 Trusses = 1 Load.

SCOTS TROY, or DUTCH WEIGHT.

16 Drops make 1 Ounce
16 Ounces = 1 Pound
16 Pounds = 1 Stone

One Pound contains 7600 grains, one hundred weight Avoird. = 108lb. 2 $\frac{1}{2}$ oz. Dutch.

M E A S U R E S.

LONG MEASURE.

12 Inches - make - 1 Foot
3 Feet - = - 1 Yard
5 $\frac{1}{2}$ Yards - = - 1 Pole
40 Poles - = - 1 Furlong
8 Furlongs - = - 1 Mile
69 one-tenth miles, nearly = 1 Degree.
The Degree is also divided into 60 equal parts, called *Nautical*, or *Geographical* miles, three of which are equal to one League.

CLOTH MEASURE.

2 $\frac{1}{2}$ Inches make 1 Nail
4 Nails = 1 Quarter
4 Quarters = 1 Yard
3 Quarters = 1 Ell Flemish
5 Quarters = 1 Ell English
6 Quarters = 1 Ell French
4 Quarters 1 1-5th in. } = 1 Ell Scots.
Or 37 1-5th - }

ENGLISH LAND MEASURE.

9 Square Feet make 1 Square Yard
30 $\frac{1}{4}$ Yards = 1 Pole
40 Poles = 1 Rood
4 Roods = 1 Acre.

SCOTS LAND MEASURE.

36 Square Ells make 1 Fall
40 Falls = 1 Rood
4 Roods = 1 Acre.

SOLID MEASURE.

1728 Cubic Inches make 1 Cubic Foot
27 Feet = 1 Yard or Load.

COAL MEASURE.

3 Bushels make 1 Sac^{re}
36 Bushels, or 12 Sacks = 1 Chaldron.

WINE MEASURE.

2 Pints make 1 Quart
4 Quarts = 1 Gallon = 231 in.
42 Gallons = 1 Tierce
63 Gallons = 1 Hogshead
84 Gallons, or 1 $\frac{1}{2}$ hhd. = 1 Puncheon
2 Hogsheads = 1 Pipe
2 Pipes = 1 Tun.

ALE AND BEER MEASURE.

2 Pints - make 1 Quart
4 Quarts = 1 Gall = 282 inch.
8 Gall. of Ale, or 9 of Beer = 1 Firkin
2 Firkins = 1 Kilderkin
2 Kilderkins = 1 Barrel
1 $\frac{1}{2}$ Barrels = 1 Hogshead
2 Barrels = 1 Puncheon, and 3 = 1 Butt.

ENGLISH DRY MEASURE.

8 Pints make 1 Gallon = 268 4-5ths in.
2 Gallons = 1 Peck
4 Pecks = 1 Bushel
8 Bushels = 1 Quarter.

SCOTS DRY MEASURE.

4 Lippies make 1 Peck
4 Pecks = 1 Firiot
4 Firlots = 1 Boll
16 Bolls = 1 Chaldron.

CIRCLE.

60 Seconds make 1 Minute
60 Minutes = 1 Degree
30 Degrees = 1 Sign
12 Signs = 1 Circle.

TIME.

60 Seconds make 1 Minute
60 Minutes = 1 Hour
24 Hours = 1 Day
7 Days = 1 Week, 365 $\frac{1}{4}$ Days = 1 Year.

TABLE LXXXV.
SPECIFIC GRAVITIES.

Name.—Solids.	Sp. Grav.	Name.—Solids.	Sp. Grav.
ure Platina	23000	Alum	1714
ne Gold	19640	Borax	1714
andard Gold	18888	Dry Bone	1660
ead	11325	Calculus Humanus	1620
ine Silver	11091	Sand	1520
andard Silver, struck into money	10629	Gum Arabic	1375
andard Silver, cast	10528	Lignum Vitæ	1327
ismuth	9700	Coal	1260
ine Copper	9000	Jet	1238
opper halfpence	8915	Ebony	1177
un Metal	8784	Pitch	1150
ine Brass	8350	Rosin	1100
ast Brass	8000	Mahogany	1063
eel	7850	Amber	1040
panish Bar Iron	7827	Brazil Wood	1031
wedish Bar Iron	7818	Box Wood	1030
on	7645	Bee's Wax	955
ewter	7471	Oak	925
ast Iron	7425	Gunpowder, shaken	922
in	7320	Logwood	913
ative Cinnabar	7300	Ice	908
lass of Antimony	5280	Ash	800
oadstone	5018	Maple	755
apis Calaminaris	5000	Beech	700
ungarian Antimony	4700	Plumbtree	663
ean of the whole Earth	4500	Cedar	613
rude Antimony	4000	Elm	600
wedish Granite	3978	Fir	550
ast India Diamond	3519	Sassafras Wood	482
razil Diamond	3513	Cork	240
ranite	3500		
White Lead	3160	Fluids.	
hrystal Glass	3150	Quicksilver	13600
late Glass	2942	Oil of Vitriol	1700
enetian Talc	2780	Oil of Tartar	1550
land Chrystal	2720	Honey	1450
farble	2703	Spirit of Nitre	1315
ebble Stone	2698	Aqua Fortis	1300
asper	2666	Treacle	1290
ock Chrystal	2650	Aqua Regia	1234
earl	2630	Human Blood	1054
reon Glass	2610	Canary Wine	1033
int	2596	Urine	1032
ortland Stone	2570	Milk	1031
arian Marble	2560	Sea Water	1030
nyx	2510	Ale	1028
ommon Stone	2500	Vinegar	1026
hrystal	2210	Tar	1015
lay	2160	Spring Water	1000
yster Shells	2092	Distilled Water	993
rick	2000	Red Wine	990
ommon Earth	1984	Burgundy Wine	953
itre	1900	Lintseed Oil	992
itriol	1880	Proof Spirits	931
labaster	1874	Olive Oil	913
orn	1840	Spirit of Turpentine	874
ory	1825	Pure Spirits	866
lphur	1810	Oil of Turpentine	800
alk	1793	Æther	726
olid Gunpowder	1745	Common Air	001.232

TABLE LXXXVI.

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CONTAINING THE CIRCUMFERENCE AND AREA OF A CIRCLE,
TO A GIVEN DIAMETER.

Dia.	Circum.	Area.	Dia.	Circum.	Area.	Dia.	Circum.	Area.	Dia.	Circum.	Area.
1.0	3.14159	0.78540	3.8	11.93805	11.34115	6.6	20.73451	34.21194	9.4	29.53097	69.39778
1.1	3.45575	0.95033	3.9	12.25220	11.94591	6.7	21.04867	35.25652	9.5	29.84513	70.88218
1.2	3.76991	1.13097	4.0	12.56637	12.56637	6.8	21.36283	36.31681	9.6	30.15929	72.38225
1.3	4.08407	1.32732	4.1	12.88053	13.20254	6.9	21.67699	37.39281	9.7	30.47345	73.89811
1.4	4.39823	1.53938	4.2	13.19469	13.85442	7.0	21.99115	38.48451	9.8	30.78761	75.42964
1.5	4.71239	1.76715	4.3	13.50885	14.52201	7.1	22.30531	39.59192	9.9	31.10177	76.97687
1.6	5.02655	2.01062	4.4	13.82301	15.20531	7.2	22.61947	40.71504	10.0	31.41593	78.53982
1.7	5.34071	2.26980	4.5	14.13717	15.90431	7.3	22.93363	41.85387	10.1	31.73009	80.11847
1.8	5.65487	2.54469	4.6	14.45133	16.61903	7.4	23.24779	43.00840	10.2	32.04425	81.71285
1.9	5.96903	2.83529	4.7	14.76549	17.34945	7.5	23.56194	44.17865	10.3	32.35840	83.32285
2.0	6.28319	3.14159	4.8	15.07964	18.09557	7.6	23.87610	45.36460	10.4	32.67256	84.94867
2.1	6.59734	3.46361	4.9	15.39380	18.85741	7.7	24.19026	46.56626	10.5	32.98672	86.57902
2.2	6.91150	3.80133	5.0	15.70796	19.63495	7.8	24.50442	47.78362	10.6	33.30088	88.24734
2.3	7.22566	4.15476	5.1	16.02212	20.42821	7.9	24.81858	49.01670	10.7	33.61504	89.92024
2.4	7.53982	4.52389	5.2	16.33628	21.23717	8.0	25.13274	50.26548	10.8	33.92920	91.60884
2.5	7.85398	4.90874	5.3	16.65044	22.06183	8.1	25.44690	51.52997	10.9	34.24336	93.31316
2.6	8.16814	5.30929	5.4	16.96460	22.90221	8.2	25.76106	52.81017	11.0	34.55752	95.03318
2.7	8.48230	5.72555	5.5	17.27876	23.75829	8.3	26.07522	54.10608	11.1	34.87168	96.76891
2.8	8.79646	6.15752	5.6	17.59292	24.63009	8.4	26.38938	55.41769	11.2	35.18584	98.52031
2.9	9.11062	6.60520	5.7	17.90708	25.51759	8.5	26.70354	56.74502	11.3	35.50000	100.28741
3.0	9.42478	7.06858	5.8	18.22124	26.42079	8.6	27.01770	58.08805	11.4	35.81416	102.07092
3.1	9.73894	7.54768	5.9	18.53540	27.33971	8.7	27.33186	59.44679	11.5	36.12832	103.86891
3.2	10.05310	8.04248	6.0	18.84956	28.27433	8.8	27.64602	60.82129	11.6	36.44247	105.68311
3.3	10.36726	8.55299	6.1	19.16372	29.22467	8.9	27.96017	62.21139	11.7	36.75663	107.51311
3.4	10.68142	9.07920	6.2	19.47787	30.19071	9.0	28.27433	63.61725	11.8	37.07079	109.35884
3.5	10.99557	9.62113	6.3	19.79203	31.17245	9.1	28.58849	65.03882	11.9	37.38495	111.22024
3.6	11.30973	10.17876	6.4	20.10619	32.16991	9.2	28.90265	66.47610	12.0	37.69911	113.09734
3.7	11.62389	10.75210	6.5	20.42035	33.18307	9.3	29.21681	67.92909	12.1	38.01327	114.98924

TABLE LXXXVII.

CONTAINING THE DIAMETER AND AREA OF A CIRCLE, WHOSE CIRCUM-
FERENCE IS GIVEN.

Cir.	Diameter	Area.	Cir.	Diameter	Area.	Cir.	Diameter	Area.	Cir.	Diameter	Area.
1.0	0.31831	0.07958	3.8	1.20958	1.14910	6.6	2.10085	3.46639	9.4	2.99211	7.03147
1.1	0.35014	0.09629	3.9	1.24141	1.21037	6.7	2.13268	3.57223	9.5	3.02394	7.18187
1.2	0.38197	0.11459	4.0	1.27324	1.27324	6.8	2.16451	3.67966	9.6	3.05577	7.33886
1.3	0.41380	0.13449	4.1	1.30507	1.33770	6.9	2.19634	3.78868	9.7	3.08761	7.48744
1.4	0.44563	0.15597	4.2	1.33690	1.40375	7.0	2.22817	3.89930	9.8	3.11944	7.64262
1.5	0.47746	0.17905	4.3	1.36873	1.47139	7.1	2.26000	4.01150	9.9	3.15127	7.79939
1.6	0.50930	0.20372	4.4	1.40056	1.54062	7.2	2.29183	4.12530	10.0	3.18310	7.95775
1.7	0.54113	0.22998	4.5	1.43239	1.61144	7.3	2.32366	4.24068	10.1	3.21493	8.11770
1.8	0.57296	0.25783	4.6	1.46423	1.68586	7.4	2.35549	4.35766	10.2	3.24676	8.27924
1.9	0.60479	0.28727	4.7	1.49606	1.75787	7.5	2.38732	4.47623	10.3	3.27859	8.44237
2.0	0.63662	0.31831	4.8	1.52789	1.83346	7.6	2.41916	4.49639	10.4	3.31042	8.60710
2.1	0.66845	0.35094	4.9	1.55972	1.91066	7.7	2.45099	4.71815	10.5	3.34225	8.77342
2.2	0.70028	0.38515	5.0	1.59155	1.98944	7.8	2.48282	4.84149	10.6	3.37408	8.94132
2.3	0.73211	0.42096	5.1	1.62338	2.06981	7.9	2.51465	4.96643	10.7	3.40592	9.11082
2.4	0.76394	0.45837	5.2	1.65521	2.15177	8.0	2.54648	4.92968	10.8	3.43775	9.28192
2.5	0.79577	0.49736	5.3	1.68704	2.23533	8.1	2.57831	5.22108	10.9	3.46958	9.45460
2.6	0.82761	0.53794	5.4	1.71887	2.32047	8.2	2.61014	5.35079	11.0	3.50141	9.62887
2.7	0.85944	0.58012	5.5	1.75070	2.40722	8.3	2.64197	5.48209	11.1	3.53324	9.80474
2.8	0.89127	0.62389	5.6	1.78254	2.49555	8.4	2.67380	5.61499	11.2	3.56507	9.98220
2.9	0.92310	0.66925	5.7	1.81437	2.58547	8.5	2.70563	5.74947	11.3	3.59690	10.16125
3.0	0.95493	0.71620	5.8	1.84620	2.67699	8.6	2.73747	5.88555	11.4	3.62873	10.34189
3.1	0.98676	0.76474	5.9	1.87803	2.77009	8.7	2.76930	6.02322	11.5	3.66056	10.52412
3.2	1.01859	0.81487	6.0	1.90985	2.86479	8.8	2.80113	6.16248	11.6	3.69239	10.70934
3.3	1.05042	0.86680	6.1	1.94169	2.96108	8.9	2.83296	6.30333	11.7	3.72423	10.89936
3.4	1.08225	0.91992	6.2	1.97352	3.05896	9.0	2.86479	6.44578	11.8	3.75606	11.08037
3.5	1.11408	0.97482	6.3	2.00536	3.15843	9.1	2.89662	6.58981	11.9	3.78789	11.26897
3.6	1.14592	1.03132	6.4	2.03718	3.25949	9.2	2.92845	6.73544	12.0	3.81972	11.45916
3.7	1.17775	1.08942	6.5	2.06901	3.36215	9.3	2.96028	6.88266	12.1	3.85155	11.65392

TABLE LXXXVIII.

TO REDUCE THE DIAMETERS OF CASKS OF THE DIFFERENT VARIETIES,
TO A MEAN DIAMETER.

SPHEROID.

Difference between the Bung and Head Diameters.

Inches.	Tenths of an Inch.									
	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
1	0.67	0.74	0.81	0.87	0.94	1.01	1.08	1.15	1.21	1.28
2	1.35	1.42	1.49	1.56	1.62	1.69	1.76	1.83	1.90	1.97
3	2.04	2.11	2.17	2.24	2.31	2.38	2.45	2.52	2.59	2.66
4	2.73	2.80	2.87	2.94	3.01	3.08	3.15	3.22	3.29	3.36
5	3.43	3.50	3.57	3.64	3.71	3.79	3.86	3.93	4.00	4.07
6	4.14	4.21	4.28	4.35	4.42	4.49	4.56	4.63	4.71	4.78
7	4.85	4.92	4.99	5.06	5.14	5.21	5.28	5.35	5.42	5.49
8	5.57	5.64	5.71	5.78	5.85	5.93	6.00	6.07	6.14	6.21
9	6.29	6.36	6.43	6.50	6.57	6.65	6.72	6.79	6.86	6.93
10	7.00	7.07	7.14	7.21	7.29	7.36	7.44	7.51	7.58	7.65

FIRST VARIETY.

Inches.	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
1	0.63	0.69	0.75	0.82	0.88	0.95	1.01	1.07	1.14	1.20
2	1.27	1.33	1.39	1.46	1.52	1.59	1.65	1.71	1.78	1.84
3	1.91	1.97	2.04	2.10	2.17	2.23	2.30	2.36	2.43	2.49
4	2.56	1.62	2.69	2.75	2.82	2.88	2.95	3.01	3.08	3.14
5	3.21	3.27	3.34	3.40	3.47	3.54	3.60	3.67	3.73	3.80
6	3.87	3.93	4.00	4.06	4.13	4.20	4.26	4.33	4.39	4.46
7	4.53	4.59	4.66	4.72	4.79	4.86	4.92	4.99	5.05	5.12
8	5.19	5.25	5.32	5.38	5.45	5.52	5.58	5.65	5.71	5.78
9	5.85	5.91	5.98	6.04	6.11	6.18	6.24	6.31	6.37	6.44
10	6.51	6.57	6.64	6.70	6.77	6.84	6.90	6.96	7.03	7.10

SECOND VARIETY.

Inches.	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
1	0.59	0.64	0.70	0.76	0.82	0.88	0.94	1.00	1.06	1.12
2	1.18	1.24	1.30	1.36	1.42	1.48	1.54	1.60	1.66	1.72
3	1.78	1.84	1.90	1.96	2.02	2.08	2.14	2.20	2.26	2.32
4	2.38	2.44	2.50	2.56	2.62	2.68	2.74	2.80	2.86	2.92
5	2.99	3.05	3.11	3.17	3.23	3.29	3.35	3.41	3.47	3.53
6	3.60	3.66	3.72	3.78	3.84	3.90	3.96	4.02	4.08	4.14
7	4.21	4.27	4.33	4.39	4.45	4.51	4.57	4.63	4.69	4.75
8	4.82	4.88	4.94	5.00	5.06	5.12	5.18	5.24	5.30	5.36
9	5.43	5.49	5.55	5.61	5.67	5.73	5.80	5.86	5.92	5.99
10	6.05	6.11	6.17	6.23	6.30	6.36	6.42	6.48	6.54	6.60

THIRD VARIETY.

Inches.	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
1	0.55	0.60	0.66	0.71	0.77	0.82	0.88	0.93	0.99	1.04
2	1.10	1.15	1.21	1.26	1.32	1.37	1.43	1.48	1.54	1.59
3	1.65	1.70	1.76	1.81	1.87	1.92	1.98	2.03	2.09	2.14
4	2.20	2.25	2.31	2.36	2.42	2.48	2.53	2.59	2.64	2.70
5	2.76	2.81	2.87	2.92	2.98	3.04	3.09	3.15	3.20	3.26
6	3.32	3.37	3.43	3.48	3.54	3.60	3.65	3.71	3.76	3.82
7	3.88	3.93	3.99	4.04	4.10	4.16	4.21	4.27	4.32	4.38
8	4.44	4.50	4.55	4.61	4.66	4.72	4.78	4.84	4.89	4.95
9	5.01	5.07	5.12	5.18	5.24	5.30	5.36	5.41	5.47	5.53
10	5.59	5.65	5.70	5.76	5.82	5.88	5.94	5.99	6.05	6.11

TABLE LXXXIX.

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REMARKABLE ÆRAS AND EVENTS.

Æras and Events.	Jul. Per.	Year of World.	Before Christ.
The Creation of the World	706	0	4007
The Flood, or Deluge	2362	1656	2351
The Assyrian Monarchy, founded by Nimrod	2537	1831	2176
Birth of Abraham	2714	2008	1999
Sodom and Gomorrah destroyed	2816	2110	1897
Kingdom of Athens, founded by Cecrops	3157	2451	1556
Moses received the Ten Commandments	3222	2516	1491
The Israelites enter Canaan	3262	2556	1451
The Destruction of Troy	3529	2823	1184
Solomon's Temple founded	3701	2995	1012
The Argonautic Expedition	3776	3070	937
Lycurgus formed his Laws	3829	3103	884
Arbaces, first King of the Medes	3838	3132	875
Beginning of the Olympiads of the Greeks	3938	3232	775
Æra of the Building of Rome	3961	3255	752
Æra of Nabonassar	3967	3261	746
First Eclipse of the Moon on record	3993	3287	720
First Babylonish Captivity by Nebuchadnezzar	4107	3401	606
Second Babylonish Captivity, and Birth of Cyrus	4114	3408	599
Destruction of Solomon's Temple	4125	3419	588
Cyrus began to Reign in Babylon	4177	3471	536
The Battle of Marathon	4223	3517	490
Beginning of the Peloponnesian War	4282	3576	431
Alexander the Great died	4390	3684	323
Captivity of 100000 Jews by Ptolemy	4393	3687	320
Archimedes killed at Syracuse	4506	3800	207
Julius Cæsar invaded Britain	4659	3953	54
He corrected the Kalendar	4667	3961	46
Cæsar killed in the Senate-house	4671	3965	42
The Battle of Actium	4683	3977	30
The true Æra of the Birth of Christ	4709	4003	4
Commencement of the Christian Æra.	—	—	sin. Christ.
The Dionysian, or vulgar Æra of Christ's birth	4713	4007	0
Crucifixion of Christ, April 3d.	4746	4040	33
Jerusalem destroyed	4783	4077	70
Adrian's Wall built in Britain	4833	4127	120
The Dioclesian Epoch, or that of Martyrs	4997	4291	284
The Council of Nice	5038	4332	325
Constantine the Great died	5050	4344	337
The Saxons invited into Britain	5158	4452	445
The Arabian Hegira, or flight of Mohammed	5335	4629	662
The Death of Mohammed	5343	4637	630
The Persian Yesdegird	5344	4638	631
The ☉, ☽, and Planets ♀, ♄, ♀, ♀, ♄, in libra, seen from Earth	5899	5193	1186
The Art of Printing discovered	6153	5447	1440
The Reformation begun by Martin Luther	6230	5524	1517
Tycho Brahé born December 14th, at Knudstorp	6259	5553	1546
The Kalendar corrected by Pope Gregory	6295	5589	1582
Sir Isaac Newton born at Woolstrop in Lincolnshire, Dec. 25.	6355	5649	1642
Mr. John Flamsteed, first Astronomer Royal, born August 19.	6359	5653	1646
Dr. Edmund Halley, second Astronomer Royal, born Oct. 27.	6369	5663	1656
The Royal Society established in London July 15.	6875	5669	1662
Foundation of the Royal Observatory at Greenwich laid Aug. 10.	6388	5682	1675
Dr. James Bradley, third Astronomer Royal, born	6405	5699	1692
The Treaty of Union between Eng. and Scotland, signed July 22.	6419	5713	1706
Sir Isaac Newton died March 20th.	6440	5734	1727
Planet Georgium Sidus, discovered by Dr. Herschel, March 13.	6494	5788	1781
Royal Society of Edinburgh incorporated	6496	5790	1783
Louis XVI. King of France, guillotined January 21st.	6506	5800	1793
Literary and Philosoph. Society of Newcastle upon Tyne, Feb. 7.	6506	5800	1793
Planet Ceres Ferdinanda, discovered by M. Piazzi, January 1.	6514	5808	1801
Planet Pallas, discovered by Dr. Olbers, March 28th.	6515	5809	1802

TABLE XC. LOGISTIC LOGARITHMS.

Minutes.

Sec.	0	1	2	3	4	5	6	7	8	9	10
0		1.7782	1.4771	1.3010	1.1761	1.0792	1.0000	9331	8751	8239	7782
1	3.5563	1.7710	1.4735	1.2986	1.1743	1.0777	9988	9320	8742	8231	7774
2	3.2553	1.7639	1.4699	1.2962	1.1725	1.0763	9976	9310	8738	8223	7767
3	3.0792	1.7570	1.4664	1.2939	1.1707	1.0749	9964	9300	8724	8215	7760
4	2.9542	1.7501	1.4629	1.2915	1.1689	1.0734	9952	9289	8715	8207	7753
5	2.8573	1.7434	1.4594	1.2891	1.1671	1.0720	9940	9279	8706	8199	7745
6	2.7782	1.7368	1.4559	1.2868	1.1654	1.0706	9928	9269	8697	8191	7738
7	2.7112	1.7302	1.4525	1.2845	1.1636	1.0692	9916	9259	8688	8183	7731
8	2.6532	1.7238	1.4491	1.2821	1.1619	1.0678	9905	9249	8679	8175	7724
9	2.6021	1.7175	1.4457	1.2798	1.1601	1.0663	9893	9238	8670	8167	7717
10	2.5563	1.7112	1.4424	1.2775	1.1584	1.0649	9881	9228	8661	8159	7710
11	2.5149	1.7050	1.4390	1.2753	1.1566	1.0635	9869	9218	8652	8152	7703
12	2.4771	1.6990	1.4357	1.2730	1.1549	1.0621	9858	9208	8643	8144	7696
13	2.4424	1.6930	1.4325	1.2707	1.1532	1.0608	9846	9198	8635	8136	7688
14	2.4102	1.6871	1.4292	1.2685	1.1515	1.0594	9834	9188	8626	8128	7681
15	2.3802	1.6812	1.4260	1.2663	1.1498	1.0580	9823	9178	8617	8120	7674
16	2.3522	1.6755	1.4228	1.2640	1.1481	1.0566	9811	9168	8608	8112	7667
17	2.3259	1.6698	1.4196	1.2618	1.1464	1.0552	9800	9158	8599	8104	7660
18	2.3010	1.6642	1.4165	1.2596	1.1447	1.0539	9788	9148	8591	8097	7653
19	2.2775	1.6587	1.4133	1.2574	1.1430	1.0525	9777	9138	8582	8089	7646
20	2.2553	1.6532	1.4102	1.2553	1.1413	1.0512	9765	9128	8573	8081	7639
21	2.2341	1.6478	1.4071	1.2531	1.1397	1.0498	9754	9119	8565	8073	7632
22	2.2139	1.6425	1.4040	1.2510	1.1380	1.0484	9742	9109	8556	8066	7625
23	2.1946	1.6372	1.4010	1.2488	1.1363	1.0471	9731	9099	8547	8058	7618
24	2.1761	1.6320	1.3979	1.2467	1.1347	1.0458	9720	9089	8539	8050	7611
25	2.1584	1.6269	1.3949	1.2445	1.1331	1.0444	9708	9079	8530	8043	7604
26	2.1413	1.6218	1.3919	1.2424	1.1314	1.0431	9697	9070	8522	8035	7597
27	2.1249	1.6168	1.3890	1.2403	1.1298	1.0418	9686	9060	8513	8027	7590
28	2.1091	1.6118	1.3860	1.2382	1.1282	1.0404	9675	9050	8504	8020	7583
29	2.0939	1.6069	1.3831	1.2362	1.1266	1.0391	9664	9041	8496	8012	7577
30	2.0792	1.6021	1.3802	1.2341	1.1249	1.0378	9652	9031	8487	8004	7570
31	2.0649	1.5973	1.3773	1.2320	1.1233	1.0365	9641	9021	8479	7997	7563
32	2.0512	1.5925	1.3745	1.2300	1.1217	1.0352	9630	9012	8470	7989	7556
33	2.0378	1.5878	1.3716	1.2279	1.1201	1.0339	9619	9002	8462	7981	7549
34	2.0248	1.5832	1.3688	1.2259	1.1186	1.0326	9608	8992	8453	7974	7542
35	2.0122	1.5786	1.3660	1.2239	1.1170	1.0313	9597	8983	8445	7966	7535
36	2.0000	1.5740	1.3632	1.2218	1.1154	1.0300	9586	8973	8437	7959	7528
37	1.9881	1.5695	1.3604	1.2198	1.1138	1.0287	9575	8964	8428	7951	7522
38	1.9765	1.5651	1.3576	1.2178	1.1123	1.0274	9564	8954	8420	7944	7515
39	1.9652	1.5607	1.3549	1.2159	1.1107	1.0261	9553	8945	8411	7936	7508
40	1.9542	1.5563	1.3522	1.2139	1.1091	1.0246	9542	8935	8403	7929	7501
41	1.9435	1.5520	1.3495	1.2119	1.1076	1.0235	9532	8926	8395	7921	7494
42	1.9331	1.5477	1.3468	1.2099	1.1061	1.0223	9521	8917	8386	7914	7488
43	1.9228	1.5435	1.3441	1.2080	1.1045	1.0210	9510	8907	8378	7906	7481
44	1.9128	1.5393	1.3415	1.2061	1.1030	1.0197	9499	8898	8370	7899	7474
45	1.9031	1.5351	1.3388	1.2041	1.1015	1.0185	9488	8888	8361	7891	7467
46	1.8935	1.5310	1.3362	1.2022	1.0999	1.0172	9478	8879	8353	7884	7461
47	1.8842	1.5269	1.3336	1.2003	1.0984	1.0160	9467	8870	8345	7877	7454
48	1.8751	1.5229	1.3310	1.1984	1.0969	1.0147	9456	8861	8337	7869	7447
49	1.8661	1.5189	1.3284	1.1965	1.0954	1.0135	9446	8851	8328	7862	7441
50	1.8573	1.5149	1.3259	1.1946	1.0939	1.0122	9435	8842	8320	7855	7434
51	1.8487	1.5110	1.3233	1.1927	1.0924	1.0110	9425	8833	8312	7847	7427
52	1.8403	1.5071	1.3208	1.1908	1.0909	1.0098	9414	8824	8304	7840	7421
53	1.8320	1.5032	1.3183	1.1889	1.0894	1.0085	9404	8814	8296	7832	7414
54	1.8239	1.4994	1.3158	1.1871	1.0880	1.0073	9393	8805	8288	7825	7407
55	1.8159	1.4956	1.3133	1.1852	1.0865	1.0061	9383	8796	8279	7818	7401
56	1.8081	1.4918	1.3108	1.1834	1.0850	1.0049	9372	8787	8271	7811	7394
57	1.8004	1.4881	1.3083	1.1816	1.0835	1.0036	9362	8778	8263	7803	7387
58	1.7929	1.4844	1.3059	1.1797	1.0821	1.0024	9351	8769	8255	7796	7381
59	1.7855	1.4808	1.3034	1.1779	1.0806	1.0012	9341	8760	8247	7789	7374
Sec.	0	60	120	180	240	300	360	420	480	540	600

Seconds.

TABLE XC.
LOGISTIC LOGARITHMS.

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Minutes.														
Sec.	11	12	13	14	15	16	17	18	19	20	21	22	23	24
0	7368	6990	6642	6320	6021	5740	5477	5229	4994	4771	4559	4357	4164	3979
1	7361	6984	6637	6315	6016	5736	5473	5225	4990	4768	4556	4354	4161	3976
2	7354	6978	6631	6310	6011	5731	5469	5221	4986	4764	4552	4351	4158	3973
3	7348	6972	6625	6305	6006	5727	5464	5217	4983	4760	4549	4347	4155	3970
4	7341	6966	6620	6300	6001	5722	5460	5213	4979	4757	4546	4344	4152	3967
5	7335	6960	6614	6294	5997	5718	5456	5209	4975	4753	4542	4341	4149	3964
6	7328	6954	6609	6289	5992	5713	5452	5205	4971	4750	4539	4338	4146	3961
7	7322	6948	6603	6284	5987	5709	5447	5201	4967	4746	4535	4334	4142	3958
8	7315	6942	6598	6279	5982	5704	5443	5197	4964	4742	4532	4331	4139	3955
9	7309	6936	6592	6274	5977	5700	5439	5193	4960	4739	4528	4328	4136	3952
10	7302	6930	6587	6269	5973	5695	5435	5189	4956	4735	4525	4325	4133	3949
11	7296	6924	6581	6264	5968	5691	5430	5185	4952	4732	4522	4321	4130	3946
12	7289	6918	6576	6259	5963	5686	5426	5181	4949	4728	4518	4318	4127	3943
13	7283	6912	6570	6254	5958	5682	5422	5177	4945	4724	4515	4315	4124	3940
14	7276	6906	6565	6248	5954	5677	5418	5173	4941	4721	4511	4311	4120	3937
15	7270	6900	6559	6243	5949	5673	5414	5169	4937	4717	4508	4308	4117	3934
16	7264	6894	6554	6238	5944	5669	5409	5165	4933	4714	4505	4305	4114	3931
17	7257	6888	6548	6233	5939	5664	5405	5161	4930	4710	4501	4302	4111	3928
18	7251	6882	6543	6228	5935	5660	5401	5157	4926	4707	4498	4298	4108	3925
19	7244	6877	6538	6223	5930	5655	5397	5153	4922	4703	4494	4295	4105	3922
20	7238	6871	6532	6218	5925	5651	5393	5149	4918	4699	4491	4292	4102	3919
21	7232	6865	6527	6213	5920	5646	5389	5145	4915	4696	4488	4289	4099	3917
22	7225	6859	6521	6208	5916	5642	5384	5141	4911	4692	4484	4285	4096	3914
23	7219	6853	6516	6203	5911	5637	5380	5137	4907	4689	4481	4282	4092	3911
24	7212	6847	6510	6198	5906	5633	5376	5133	4903	4685	4477	4279	4089	3908
25	7206	6841	6505	6193	5902	5629	5372	5129	4900	4682	4474	4276	4086	3905
26	7200	6836	6500	6188	5897	5624	5368	5125	4896	4678	4471	4273	4083	3902
27	7193	6830	6494	6183	5892	5620	5364	5122	4892	4675	4467	4269	4080	3899
28	7187	6824	6489	6178	5888	5615	5359	5118	4889	4671	4464	4266	4077	3896
29	7181	6818	6484	6173	5883	5611	5355	5114	4885	4668	4460	4263	4074	3893
30	7175	6812	6478	6168	5878	5607	5351	5110	4881	4664	4457	4260	4071	3890
31	7168	6807	6473	6163	5874	5602	5347	5106	4877	4660	4454	4256	4068	3887
32	7162	6801	6467	6158	5869	5598	5343	5102	4874	4657	4450	4253	4065	3884
33	7156	6795	6462	6153	5864	5594	5339	5098	4870	4653	4447	4250	4062	3881
34	7149	6789	6457	6148	5860	5589	5335	5094	4866	4650	4444	4247	4059	3878
35	7143	6784	6451	6143	5855	5585	5331	5090	4863	4646	4440	4244	4055	3875
36	7137	6778	6446	6138	5850	5580	5326	5086	4859	4643	4437	4240	4052	3872
37	7131	6772	6441	6133	5846	5576	5322	5082	4855	4639	4434	4237	4049	3869
38	7124	6766	6435	6128	5841	5572	5318	5079	4852	4636	4430	4234	4046	3866
39	7118	6761	6430	6123	5836	5567	5314	5075	4848	4632	4427	4231	4043	3863
40	7112	6755	6425	6118	5832	5563	5310	5071	4844	4629	4424	4228	4040	3860
41	7106	6749	6420	6113	5827	5559	5306	5067	4841	4625	4420	4224	4037	3857
42	7100	6743	6414	6108	5823	5554	5302	5063	4837	4622	4417	4221	4034	3855
43	7093	6738	6409	6103	5818	5550	5298	5059	4833	4618	4414	4218	4031	3852
44	7087	6732	6404	6099	5813	5546	5294	5055	4830	4615	4410	4215	4028	3849
45	7081	6726	6398	6094	5809	5541	5290	5051	4826	4611	4407	4212	4025	3846
46	7075	6721	6393	6089	5804	5537	5285	5048	4822	4608	4404	4209	4022	3843
47	7069	6715	6388	6084	5800	5533	5281	5044	4819	4604	4400	4205	4019	3840
48	7063	6709	6383	6079	5795	5528	5277	5040	4815	4601	4397	4202	4016	3837
49	7057	6704	6377	6074	5790	5524	5273	5036	4811	4597	4394	4199	4013	3834
50	7050	6698	6372	6069	5786	5520	5269	5032	4808	4594	4390	4196	4010	3831
51	7044	6692	6367	6064	5781	5516	5265	5028	4804	4590	4387	4193	4007	3828
52	7038	6687	6362	6059	5777	5511	5261	5025	4800	4587	4384	4189	4004	3825
53	7032	6681	6357	6055	5772	5507	5257	5021	4797	4584	4380	4186	4001	3822
54	7026	6676	6351	6050	5768	5503	5253	5017	4793	4580	4377	4183	3998	3820
55	7020	6670	6346	6045	5763	5498	5249	5013	4789	4577	4374	4180	3995	3817
56	7014	6664	6341	6040	5758	5494	5245	5009	4786	4573	4370	4177	3991	3814
57	7008	6659	6336	6035	5754	5490	5241	5005	4782	4570	4367	4174	3988	3811
58	7002	6653	6331	6030	5749	5486	5237	5002	4778	4566	4364	4171	3985	3808
59	6996	6648	6325	6025	5745	5481	5233	4998	4775	4563	4361	4167	3982	3805
Sec.	660	720	780	840	900	960	1020	1080	1140	1200	1260	1320	1380	1440

Seconds.

TABLE XC. LOGISTIC LOGARITHMS.

Minutes.														
Sec.	25	26	27	28	29	30	31	32	33	34	35	36	37	
0	3803	3632	3468	3310	3158	3010	2868	2730	2596	2467	2341	2218	2099	
1	3799	3629	3465	3307	3155	3008	2866	2728	2594	2465	2339	2216	2098	
2	3796	3626	3463	3305	3153	3005	2863	2725	2592	2463	2337	2214	2096	
3	3793	3623	3460	3302	3150	3003	2861	2723	2590	2460	2335	2212	2094	
4	3791	3621	3457	3300	3148	3001	2859	2721	2588	2458	2333	2210	2092	
5	3788	3618	3454	3297	3145	2998	2856	2719	2585	2456	2331	2208	2090	
6	3785	3615	3452	3294	3143	2996	2854	2716	2583	2454	2328	2206	2088	
7	3782	3612	3449	3292	3140	2993	2852	2714	2581	2452	2326	2204	2086	
8	3779	3610	3446	3289	3138	2991	2849	2712	2579	2450	2324	2202	2084	
9	3776	3607	3444	3287	3135	2989	2847	2710	2577	2448	2322	2200	2082	
10	3773	3604	3441	3284	3133	2986	2845	2707	2574	2445	2320	2198	2080	
11	3770	3601	3438	3282	3130	2984	2842	2705	2572	2443	2318	2196	2078	
12	3768	3598	3436	3279	3128	2981	2840	2703	2570	2441	2316	2194	2076	
13	3765	3596	3433	3276	3125	2979	2838	2701	2568	2439	2314	2192	2074	
14	3762	3593	3431	3274	3123	2977	2835	2698	2566	2437	2312	2190	2072	
15	3759	3590	3428	3271	3120	2974	2833	2696	2564	2435	2310	2188	2070	
16	3756	3587	3425	3269	3118	2972	2831	2694	2561	2433	2308	2186	2068	
17	3753	3585	3423	3266	3115	2969	2828	2692	2559	2431	2306	2184	2066	
18	3750	3582	3420	3264	3113	2967	2826	2689	2557	2429	2304	2182	2064	
19	3747	3579	3417	3261	3110	2965	2824	2687	2555	2426	2302	2180	2062	
20	3745	3576	3415	3259	3108	2962	2821	2685	2553	2424	2300	2178	2061	
21	3742	3574	3412	3256	3105	2960	2819	2683	2551	2422	2298	2176	2059	
22	3739	3571	3409	3253	3103	2958	2817	2681	2548	2420	2296	2174	2057	
23	3736	3568	3407	3251	3101	2955	2815	2678	2546	2418	2294	2172	2055	
24	3733	3565	3404	3248	3098	2953	2812	2676	2544	2416	2291	2170	2053	
25	3730	3563	3401	3246	3096	2950	2810	2674	2542	2414	2289	2169	2051	
26	3727	3560	3399	3243	3093	2948	2808	2672	2540	2412	2287	2167	2049	
27	3725	3557	3396	3241	3091	2946	2805	2669	2538	2410	2285	2165	2047	
28	3722	3555	3393	3238	3088	2943	2803	2667	2535	2408	2283	2163	2045	
29	3719	3552	3391	3236	3086	2941	2801	2665	2533	2405	2281	2161	2043	
30	3716	3549	3388	3233	3083	2939	2798	2663	2531	2403	2279	2159	2041	
31	3713	3546	3386	3231	3081	2936	2796	2660	2529	2401	2277	2157	2039	
32	3710	3544	3383	3228	3078	2934	2794	2658	2527	2399	2275	2155	2037	
33	3708	3541	3380	3225	3076	2931	2792	2656	2525	2397	2273	2153	2035	
34	3705	3538	3378	3223	3073	2929	2789	2654	2522	2395	2271	2151	2033	
35	3702	3535	3375	3220	3071	2927	2787	2652	2520	2393	2269	2149	2032	
36	3699	3533	3372	3218	3069	2924	2785	2649	2518	2391	2267	2147	2030	
37	3696	3530	3370	3215	3066	2922	2782	2647	2516	2389	2265	2145	2028	
38	3693	3527	3367	3213	3064	2920	2780	2645	2514	2387	2263	2143	2026	
39	3691	3525	3365	3210	3061	2917	2778	2643	2512	2384	2261	2141	2024	
40	3688	3522	3362	3208	3059	2915	2775	2640	2510	2382	2259	2139	2022	
41	3685	3519	3359	3205	3056	2912	2773	2638	2507	2380	2257	2137	2020	
42	3682	3516	3357	3203	3054	2910	2771	2636	2505	2378	2255	2135	2018	
43	3679	3514	3354	3200	3052	2908	2769	2634	2503	2376	2253	2133	2016	
44	3677	3511	3351	3198	3049	2905	2766	2632	2501	2374	2251	2131	2014	
45	3674	3508	3349	3195	3047	2903	2764	2629	2499	2372	2249	2129	2012	
46	3671	3506	3346	3193	3044	2901	2762	2627	2497	2370	2247	2127	2010	
47	3668	3503	3344	3190	3042	2898	2760	2625	2494	2368	2245	2125	2009	
48	3665	3500	3341	3188	3039	2896	2757	2623	2492	2366	2243	2123	2007	
49	3663	3497	3338	3185	3037	2894	2755	2621	2490	2364	2241	2121	2005	
50	3660	3495	3336	3183	3034	2891	2753	2618	2488	2362	2239	2119	2003	
51	3657	3492	3333	3180	3032	2889	2750	2616	2486	2359	2237	2117	2001	
52	3654	3489	3331	3178	3030	2887	2748	2614	2484	2357	2235	2115	1999	
53	3651	3487	3328	3175	3027	2884	2746	2612	2482	2355	2233	2113	1997	
54	3649	3484	3325	3173	3025	2882	2744	2610	2480	2353	2231	2111	1995	
55	3646	3481	3323	3170	3022	2880	2741	2607	2477	2351	2229	2109	1993	
56	3643	3479	3320	3168	3020	2877	2739	2605	2475	2349	2227	2107	1991	
57	3640	3476	3318	3165	3018	2875	2737	2603	2473	2347	2225	2105	1989	
58	3637	3473	3315	3163	3015	2873	2735	2601	2471	2345	2223	2103	1987	
59	3635	3471	3313	3160	3013	2870	2732	2599	2469	2343	2220	2101	1986	
Sec.	1500	1560	1620	1680	1740	1800	1860	1920	1980	2040	2100	2160	2220	

Seconds.

TABLE XC.
LOGISTIC LOGARITHMS.

21

Minutes.													
Sec.	38	39	40	41	42	43	44	45	46	47	48	49	50
0	1984	1871	1761	1654	1549	1447	1347	1249	1154	1061	969	880	792
1	1982	1869	1759	1652	1547	1445	1345	1248	1152	1059	968	878	790
2	1980	1867	1757	1650	1546	1443	1344	1246	1151	1057	966	877	789
3	1978	1865	1755	1648	1544	1442	1342	1245	1149	1056	965	875	787
4	1976	1863	1754	1647	1542	1440	1340	1243	1148	1054	963	874	786
5	1974	1862	1752	1645	1540	1438	1339	1241	1146	1053	962	872	785
6	1972	1860	1750	1643	1539	1437	1337	1240	1145	1051	960	871	783
7	1970	1858	1748	1641	1537	1435	1335	1238	1143	1050	959	869	782
8	1968	1856	1746	1640	1535	1433	1334	1237	1141	1048	957	868	780
9	1967	1854	1745	1638	1534	1432	1332	1235	1140	1047	956	866	779
10	1965	1852	1743	1636	1532	1430	1331	1233	1138	1045	954	865	777
11	1963	1850	1741	1634	1530	1428	1329	1232	1137	1044	953	863	776
12	1961	1849	1739	1633	1528	1427	1327	1230	1135	1042	951	862	774
13	1959	1847	1737	1631	1527	1425	1326	1229	1134	1041	950	860	773
14	1957	1845	1736	1629	1525	1423	1324	1227	1132	1039	948	859	772
15	1955	1843	1734	1627	1523	1422	1322	1225	1130	1037	947	857	770
16	1953	1841	1732	1626	1522	1420	1321	1224	1129	1036	945	856	769
17	1951	1839	1730	1624	1520	1418	1319	1222	1127	1034	944	855	767
18	1950	1838	1728	1622	1518	1417	1317	1221	1126	1033	942	853	766
19	1948	1836	1727	1620	1516	1415	1316	1219	1124	1031	941	852	764
20	1946	1834	1725	1619	1515	1413	1314	1217	1123	1030	939	850	763
21	1943	1832	1723	1617	1513	1412	1313	1216	1121	1028	938	849	762
22	1942	1830	1721	1615	1511	1410	1311	1214	1119	1027	936	847	760
23	1940	1828	1719	1613	1510	1408	1309	1213	1118	1025	935	846	759
24	1938	1827	1718	1612	1508	1407	1308	1211	1116	1024	933	844	757
25	1936	1825	1716	1610	1506	1405	1306	1209	1115	1022	932	843	756
26	1934	1823	1714	1608	1504	1403	1304	1208	1113	1021	930	841	754
27	1933	1821	1712	1606	1503	1402	1303	1206	1112	1019	929	840	753
28	1931	1819	1711	1605	1501	1400	1301	1205	1110	1018	927	838	751
29	1929	1817	1709	1603	1499	1398	1300	1203	1109	1016	926	837	750
30	1927	1816	1707	1601	1498	1397	1298	1201	1107	1015	924	835	749
31	1925	1814	1705	1599	1496	1395	1296	1200	1105	1013	923	834	747
32	1923	1812	1703	1598	1494	1393	1295	1198	1104	1012	921	833	746
33	1921	1810	1702	1596	1493	1392	1293	1197	1102	1010	920	831	744
34	1919	1808	1700	1594	1491	1390	1291	1195	1101	1008	918	830	743
35	1918	1806	1698	1592	1489	1388	1290	1193	1099	1007	917	828	741
36	1916	1805	1696	1591	1487	1387	1288	1192	1098	1005	915	827	740
37	1914	1803	1694	1589	1486	1385	1287	1190	1096	1004	914	825	739
38	1912	1801	1692	1587	1484	1383	1285	1189	1095	1002	912	824	737
39	1910	1799	1691	1585	1482	1382	1283	1187	1093	1011	911	822	736
40	1908	1797	1689	1584	1481	1380	1282	1186	1091	999	909	821	734
41	1906	1795	1687	1582	1479	1378	1280	1184	1090	998	908	819	733
42	1904	1794	1686	1580	1477	1377	1278	1182	1088	996	906	818	731
43	1903	1792	1684	1578	1476	1375	1277	1181	1087	995	905	816	730
44	1901	1790	1682	1577	1474	1373	1275	1179	1085	993	903	815	729
45	1899	1788	1680	1575	1472	1372	1274	1178	1084	992	902	814	727
46	1897	1786	1678	1573	1470	1370	1272	1176	1082	990	900	812	726
47	1895	1785	1677	1571	1469	1368	1270	1174	1081	989	899	811	724
48	1893	1783	1675	1570	1467	1367	1269	1173	1079	987	897	809	723
49	1891	1781	1673	1568	1465	1365	1267	1171	1078	986	896	808	721
50	1889	1779	1671	1566	1464	1363	1266	1170	1076	984	894	806	720
51	1888	1777	1670	1565	1462	1362	1264	1168	1074	983	893	805	719
52	1886	1775	1668	1563	1460	1360	1262	1167	1073	981	891	803	717
53	1884	1774	1666	1561	1459	1359	1261	1165	1071	980	890	802	716
54	1882	1772	1664	1559	1457	1357	1259	1163	1070	978	888	801	714
55	1880	1770	1663	1558	1455	1355	1257	1162	1068	977	887	799	713
56	1878	1768	1661	1556	1454	1354	1256	1160	1067	975	885	798	711
57	1876	1766	1659	1554	1452	1352	1254	1159	1065	974	884	796	710
58	1875	1765	1657	1552	1450	1350	1253	1157	1064	972	883	795	709
59	1873	1763	1655	1551	1449	1349	1251	1156	1062	971	881	793	707
Sec.	2280	2340	2400	2460	2520	2580	2640	2700	2760	2820	2880	2940	3000

Seconds.

[L L]

TABLE XC.
LOGISTIC LOGARITHMS.

Minutes.														
52	53	54	55	56	57	58	59	60	61	62	63	64	65	
621	539	458	378	300	223	148	073	000	9928	9858	9788	9720	9652	
620	537	456	377	298	221	146	072	9999	9927	9856	9787	9719	9651	
619	536	455	375	297	220	145	071	9993	9926	9855	9786	9717	9650	
617	535	454	374	296	219	143	069	9996	9925	9854	9785	9716	9649	
616	533	452	373	294	218	142	068	9995	9923	9853	9784	9715	9648	
615	532	451	371	293	216	141	067	9994	9922	9852	9782	9714	9647	
613	531	450	370	292	215	140	066	9993	9921	9851	9781	9713	9646	
612	529	448	369	291	214	139	064	9992	9920	9849	9780	9712	9645	
610	528	447	367	289	213	137	063	9990	9919	9848	9779	9711	9644	
609	526	446	366	288	211	136	062	9989	9918	9847	9778	9710	9642	
608	525	444	365	287	210	135	061	9988	9916	9846	9777	9708	9641	
606	524	443	363	285	309	134	060	9987	9915	9845	9775	9707	9640	
605	522	442	362	284	208	132	058	9986	9914	9844	9774	9706	9639	
603	521	440	361	283	206	131	057	9984	9913	9842	9773	9705	9638	
602	520	439	359	282	205	130	056	9983	9912	9841	9772	9704	9637	
601	518	438	358	280	204	129	055	9982	9910	9840	9771	9703	9636	
599	517	436	357	279	202	127	053	9981	9909	9839	9770	9702	9635	
598	516	435	356	278	201	126	052	9980	9908	9838	9769	9701	9633	
596	514	434	354	276	200	125	051	9978	9907	9837	9767	9699	9632	
595	513	432	353	275	199	124	050	9977	9906	9835	9766	9698	9631	
594	512	431	352	274	197	122	049	9976	9905	9834	9765	9697	9630	
592	510	430	350	273	196	121	047	9975	9903	9833	9764	9696	9629	
591	509	428	349	271	195	120	046	9974	9902	9832	9763	9695	9628	
590	507	427	348	270	194	119	045	9972	9901	9831	9762	9694	9627	
588	506	426	346	269	192	117	044	9971	9900	9830	9761	9693	9626	
587	505	424	345	267	191	116	042	9970	9899	9829	9759	9692	9625	
585	503	423	344	266	190	115	041	9969	9897	9827	9758	9690	9624	
584	502	422	342	265	189	114	040	9968	9896	9826	9757	9689	9622	
583	501	420	341	264	187	112	039	9966	9895	9825	9756	9688	9621	
581	499	419	340	262	186	111	038	9965	9894	9824	9755	9687	9620	
580	498	418	339	261	185	110	036	9964	9893	9823	9754	9686	9619	
579	497	416	337	260	184	109	035	9963	9892	9822	9753	9685	9618	
577	495	415	336	258	182	107	034	9962	9890	9820	9751	9684	9617	
576	494	414	335	257	181	106	033	9960	9889	9819	9750	9683	9616	
574	493	412	333	256	180	105	031	9959	9888	9818	9749	9681	9615	
573	491	411	332	255	179	104	030	9958	9887	9817	9748	9680	9614	
572	490	410	331	253	177	103	029	9957	9886	9816	9747	9679	9612	
570	489	408	329	252	176	101	028	9956	9885	9815	9746	9678	9611	
569	487	407	328	251	175	100	027	9954	9883	9813	9745	9677	9610	
568	486	406	327	250	174	099	025	9953	9882	9812	9744	9676	9609	
566	484	404	326	248	172	098	024	9952	9881	9811	9742	9675	9608	
565	483	403	324	247	171	096	023	9951	9880	9810	9741	9674	9607	
563	482	402	323	246	170	095	022	9950	9879	9809	9740	9672	9606	
562	480	400	322	244	169	094	021	9948	9877	9808	9739	9671	9605	
561	479	399	320	243	167	093	019	9947	9876	9807	9738	9670	9604	
559	478	398	319	242	165	091	018	9946	9875	9806	9737	9669	9603	
558	476	396	318	241	165	090	017	9945	9874	9804	9736	9668	9601	
557	475	395	316	239	163	089	016	9944	9873	9803	9734	9667	9600	
555	474	394	315	238	162	088	015	9942	9872	9802	9733	9666	9599	
554	472	392	314	237	161	087	013	9941	9870	9801	9732	9665	9598	
552	471	391	313	235	160	085	012	9940	9869	9800	9731	9664	9597	
551	470	390	311	234	158	084	011	9939	9868	9798	9730	9662	9596	
550	468	388	310	233	157	083	010	9938	9867	9797	9729	9661	9595	
548	467	387	309	232	156	082	008	9937	9866	9796	9728	9660	9594	
547	466	386	307	230	155	080	007	9935	9865	9795	9727	9659	9593	
546	464	384	306	229	153	079	006	9934	9863	9794	9725	9658	9592	
544	463	383	305	228	152	078	005	9933	9862	9793	9724	9657	9590	
543	462	382	304	227	151	077	004	9932	9861	9792	9723	9656	9589	
541	460	381	302	225	150	075	002	9931	9860	9790	9722	9655	9588	
540	459	379	301	224	148	074	001	9929	9859	9789	9721	9653	9587	
3120	3180	3240	3300	3360	3420	3480	3540	3600	3660	3720	3780	3840	3900	

Seconds.

TABLE XC.
LOGISTIC LOGARITHMS.

25

Minutes.														
Sec.	66	67	68	69	70	71	72	73	74	75	76	77	78	79
0	9586	9521	9456	9393	9331	9269	9203	9148	9089	9031	8973	8917	8861	880
1	9585	9520	9455	9392	9329	9268	9207	9147	9088	9030	8972	8916	8860	880
2	9584	9519	9454	9391	9328	9267	9206	9146	9087	9029	8971	8915	8859	880
3	9583	9518	9453	9390	9327	9266	9205	9145	9086	9028	8971	8914	8858	880
4	9582	9516	9452	9389	9326	9265	9204	9144	9085	9027	8970	8913	8857	880
5	9581	9515	9451	9388	9325	9264	9203	9143	9084	9026	8969	8912	8856	880
6	9579	9514	9450	9387	9324	9263	9202	9142	9083	9025	8968	8911	8855	880
7	9578	9513	9449	9386	9323	9262	9201	9141	9082	9024	8967	8910	8854	879
8	9577	9512	9448	9385	9322	9261	9200	9140	9081	9023	8966	8909	8853	879
9	9576	9511	9447	9384	9321	9260	9199	9139	9080	9022	8965	8908	8852	879
10	9575	9510	9446	9383	9320	9259	9198	9138	9079	9021	8964	8907	8851	879
11	9574	9509	9445	9381	9319	9258	9197	9137	9078	9020	8963	8906	8850	879
12	9573	9508	9444	9380	9318	9257	9196	9136	9077	9019	8962	8905	8849	879
13	9572	9507	9443	9379	9317	9256	9195	9135	9076	9018	8961	8904	8848	879
14	9571	9506	9442	9378	9316	9255	9194	9134	9076	9017	8960	8903	8847	879
15	9570	9505	9440	9377	9315	9254	9193	9133	9075	9016	8959	8903	8847	879
16	9569	9504	9439	9376	9314	9253	9192	9132	9074	9015	8958	8902	8846	879
17	9567	9502	9438	9375	9313	9252	9191	9131	9073	9015	8957	8901	8845	879
18	9566	9501	9437	9374	9312	9251	9190	9130	9072	9014	8956	8900	8844	878
19	9565	9500	9436	9373	9311	9250	9189	9129	9071	9013	8955	8899	8843	878
20	9564	9499	9435	9372	9310	9249	9188	9128	9070	9012	8954	8898	8842	878
21	9563	9498	9434	9371	9309	9248	9187	9128	9069	9011	8953	8897	8841	878
22	9562	9497	9433	9370	9308	9247	9186	9127	9068	9010	8952	8896	8840	878
23	9561	9496	9432	9369	9307	9246	9185	9126	9067	9009	8952	8895	8839	878
24	9560	9495	9431	9368	9306	9245	9184	9125	9066	9008	8951	8894	8838	878
25	9559	9494	9430	9367	9305	9244	9183	9124	9065	9007	8950	8893	8837	878
26	9558	9493	9429	9366	9304	9243	9182	9123	9064	9006	8949	8892	8837	878
27	9557	9492	9428	9365	9303	9241	9181	9122	9063	9005	8948	8891	8836	878
28	9555	9491	9427	9364	9302	9240	9180	9121	9062	9004	8947	8890	8835	878
29	9554	9490	9426	9363	9301	9239	9179	9120	9061	9003	8946	8889	8834	877
30	9553	9489	9425	9362	9300	9238	9178	9119	9060	9002	8945	8888	8833	877
31	9552	9487	9424	9361	9299	9237	9177	9118	9059	9001	8944	8888	8832	877
32	9551	9486	9422	9360	9298	9236	9176	9117	9058	9000	8943	8887	8831	877
33	9550	9485	9421	9359	9297	9235	9175	9116	9057	9000	8942	8886	8830	877
34	9549	9484	9420	9358	9296	9234	9174	9115	9056	9000	8941	8885	8829	877
35	9548	9483	9419	9356	9294	9233	9173	9114	9055	9000	8940	8884	8828	877
36	9547	9482	9418	9355	9293	9232	9172	9113	9054	9000	8939	8883	8827	877
37	9546	9481	9417	9354	9292	9231	9171	9112	9053	9000	8938	8882	8826	877
38	9545	9480	9416	9353	9291	9230	9170	9111	9052	9000	8937	8881	8825	877
39	9544	9479	9415	9352	9290	9229	9169	9110	9051	9000	8936	8880	8825	877
40	9542	9478	9414	9351	9289	9228	9168	9109	9050	9000	8935	8879	8824	876
41	9541	9477	9413	9350	9288	9227	9167	9108	9049	9000	8935	8878	8823	876
42	9540	9476	9412	9349	9287	9226	9166	9107	9048	9000	8934	8877	8822	876
43	9539	9475	9411	9348	9286	9225	9165	9106	9047	9000	8933	8876	8821	876
44	9538	9474	9410	9347	9285	9224	9164	9105	9046	9000	8932	8875	8820	876
45	9537	9472	9409	9346	9284	9223	9163	9104	9045	9000	8931	8875	8819	876
46	9536	9471	9408	9345	9283	9222	9162	9103	9044	9000	8930	8874	8818	876
47	9535	9470	9407	9344	9282	9221	9161	9102	9043	9000	8929	8873	8817	876
48	9534	9469	9406	9343	9281	9220	9160	9101	9042	9000	8928	8872	8816	876
49	9533	9468	9405	9342	9280	9219	9159	9100	9042	9000	8927	8871	8815	876
50	9532	9467	9404	9341	9279	9218	9158	9099	9041	9000	8926	8870	8814	876
51	9530	9466	9402	9340	9278	9217	9157	9098	9040	9000	8925	8869	8813	875
52	9529	9465	9401	9339	9277	9216	9156	9097	9039	9000	8924	8868	8813	875
53	9528	9464	9400	9338	9276	9215	9155	9096	9038	9000	8923	8867	8812	875
54	9527	9463	9399	9337	9275	9214	9154	9095	9037	9000	8922	8866	8811	875
55	9526	9462	9398	9336	9274	9213	9153	9094	9036	9000	8921	8865	8810	875
56	9525	9461	9397	9335	9273	9212	9152	9093	9035	9000	8920	8864	8809	875
57	9524	9460	9396	9334	9272	9211	9151	9092	9034	9000	8919	8863	8808	875
58	9523	9459	9395	9333	9271	9210	9150	9091	9033	9000	8918	8862	8807	875
59	9522	9457	9394	9332	9270	9209	9149	9090	9032	9000	8917	8861	8806	875
Sec.	3960	4020	4080	4140	4200	4260	4320	4380	4440	4500	4560	4620	4680	474

Seconds.

TABLE XCI.
FOR THE CONSTRUCTION OF WATER MILLS.

Indic. ht of fall of water.	Velocity of the		Revolutions of the		Cogs in the Wheel.	Staves in the Trundle.	No. of revol. of the millstone, per min. by these Cogs and Staves.
	Water per Second.	Wheel per Second.	Wheel per Minute.	Millstone, for one of the Wheel.			
	Feet.	Feet.	Revolut.	Revolut.			
1	8.02	2.67	2.83	21.20	127	6	59.92
2	11.34	3.78	4.00	15.00	105	7	60.00
3	13.89	4.63	4.91	12.22	96	8	60.14
4	16.04	5.35	5.67	10.58	95	9	59.87
5	17.93	5.98	6.34	9.46	85	9	59.84
6	19.64	6.55	6.94	8.64	78	9	60.10
7	21.21	7.07	7.50	8.00	72	9	60.00
8	22.68	7.56	8.02	7.48	67	9	59.67
9	24.05	8.02	8.51	7.05	70	10	59.57
10	25.35	8.45	8.97	6.69	67	10	60.09
11	26.59	8.86	9.40	6.38	64	10	60.16
12	27.77	9.26	9.82	6.11	61	10	59.90
13	28.91	9.64	10.22	5.87	59	10	60.18
14	30.00	10.00	10.60	5.66	56	10	59.36
15	31.05	10.35	10.99	5.46	55	10	60.48
16	32.07	10.69	11.34	5.29	53	10	60.10
17	33.06	11.02	11.70	5.13	51	10	59.67
18	34.02	11.34	12.02	4.99	50	10	60.10
19	34.95	11.65	12.37	4.85	49	10	60.61
20	35.86	11.95	12.68	4.73	47	10	59.59

TABLE XCII.
**QUANTITY OF WATER DISCHARGED IN ONE MINUTE, BY PUMPS OF
DIFFERENT DIMENSIONS.**

Height of pump above surf. of water.	Diameter of bore, where bucket works.	Quantity of wa- ter discharged, wine measure.	Height of pump above surf. of water.	Diameter of bore, where bucket works.	Quantity of wa- ter discharged, in wine measure.
Feet.	Inches.	Gallons. Pints.	Feet.	Inches.	Gallons. Pints.
10	6.93	81 6	60	2.84	13 5
15	5.65	54 4	65	2.72	12 4
20	4.90	40 7	70	2.62	11 5
25	4.38	32 6	75	2.53	10 7
30	4.00	27 2	80	2.45	10 2
35	3.70	23 3	85	2.38	9 5
40	3.46	20 3	90	2.31	9 1
45	3.27	18 1	95	2.25	8 5
50	3.10	16 3	100	2.19	8 1
55	2.95	14 7			

TABLE XCIII.
**LENGTH OF A PENDULUM, VIBRATING SECONDS, IN DIFFERENT LATITUDES;
WITH THE MEASURE OF A DEGREE OF LATITUDE IN ENGLISH MILES.**

Latitude.	Length of Pend.	Length of Deg.	Latitude.	Length of Pend.	Length of Deg.
degrees.	Inches.	English Miles.	Degrees.	Inches.	English Miles.
0	39.027	68.723	50	39.126	69.256
5	39.029	68.730	55	39.142	69.330
10	39.032	68.750	60	39.158	69.401
15	39.036	68.783	65	39.168	69.467
20	39.044	68.830	70	39.177	69.522
25	39.057	68.882	75	39.185	69.568
30	39.070	68.950	80	39.191	69.601
35	39.084	69.020	85	39.195	69.620
40	39.097	69.097	90	39.197	69.628
45	39.111	69.176			

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"A very useful praxis and investigation of the various modes of finding the Longitude. The author first gives a concise account of the planetary system; then describes the various instruments used in taking altitudes; and after a sufficient number of preparatory problems, the mode of finding the Longitude by lunar observations; eclipses of the Sun and Moon; occultations of fixed stars by the Moon; eclipses of the satellites of Jupiter; by the chronometer; and the variation charts. The praxis is in the former; the demonstrations in the latter part of the first volume: the second volume contains the necessary tables. After each rule is a sufficient number of examples, to give a perfect knowledge of the use of it. The Navigator who has mastered the problems in this work, will not, with a clear sky over his head, find himself at a loss for his reckoning; and it might be made a useful compendium in a long voyage; for, by daily perusal, the younger proficient in the art of Navigation may acquire a taste for a mode of observation, which we fear, notwithstanding its evident utility, has by no means obtained general practice. In speaking this of younger proficient, we do not mean to say, that any person, whether on land or at sea, who employs himself in finding the Longitude of the place he is in, will not reap much advantage by having the rules and examples laid down in this work to guide him in his practice; for no method will easily occur, of which he will not find here an example."—*Critical Review for August 1794.*

"The Theory and Practice of finding the Longitude, &c. is a work which will be found of considerable utility and importance to the Navigator and to the Astronomer, as the author appears to be accurately acquainted with the subject on which he treats, and is perspicuous and satisfactory in his methods of explanation." *New Annual Register, for 1793.*

See also *L'ESPRIT DES JOURNEAUX* for April 1794, &c.